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 Cirillo, Agostino
 Bruni Ercole, Bruno
 Meola, Annalisa

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<150> PCT/EP2005/000558

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<211> 1278

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 4 Fiber

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<211> 1335

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 5 Fiber

<400> 8

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<210> 9

<211> 1338

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 7 Fiber

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<210> 10

<211> 1278

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 9 Fiber

<400> 10

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agcagtgtct aggtgtttct acgttttgat gcaaacgggtg ttcttttaac agaacattct 960
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acctggacta atggaagcta tgttggagca acatttggag ctaactctta taccttctcc 1260
tacatcgccc aagaatga                                     1278

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<210> 11

<211> 1278

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 10 Fiber

<400> 11

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gagaagcccc tgggggtggt gtccctgcga ctggccgacc ccgtcaccac caagaacggg 180
gaaatcacc tcaagctggg agaggggggtg gacctcgact cctcgggaaa actcatctcc 240
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atggatcacc ctttttacac taaagatgga aaattatcct tacaagtttc tccaccatta 360
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aacataagct gggctaaagg tttaaaattt gaagatggag ccatagcaac caacattgga 600
aatgggttag agtttggaag cagtagtaca gaaacagggtg ttgatgatgc ttacccaatc 660
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acctggacta atggaagcta tgttggagca acatttgggg ctaactctta taccttctca 1260
tacatcgccc aagaatga                                     1278

```

<210> 12

<211> 1737

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 11 Fiber

<400> 12

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gagagccccc ccggggctct gtctctgaac ctggccgagc ccctggtcac ttcccacggc 180
atgctcgccc tgaaaatggg aagtggcctc tccctggagc acgccggcaa cctcacctct 240
caagatgtca ccaccactac ccctcccctg aaaaaaacca agaccaacct cagcctagaa 300
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gcaaaactca ccctggccac caagggcccc ctgaccgtgt ctgaaggcaa actagccttg 480
cagacctcgg ccccgctgac ggccgctgac agcagcacc tcacaatcag cgccacaccg 540
ccccttagca caagcaatgg cagcttgggt attgacatgc aagccccat ttacactact 600
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ctgactgtag tgactggcca aggtcttacg ataaacgcta cagccctaca aactagagtc 720
tcaggtgccc tcaactatga ctcatcagga aacctagaat tgagagctgc agggggtatg 780
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gatgctacag ttagcactta ctccatgtca ttctcatgga attggaatgg aagtaattac 1680
attaatgaaa cgttccaaac caactctttc accttctcct acatcgccca agaataa 1737

```

<210> 13

<211> 1632

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 16 Fiber

<400> 13

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gagagccccc ccggggctct gtctctgaac ctggccgagc ccctggtcac ttcccacggc 180
atgctcgccc tgaaaatggg aagtggcctc tccctggagc acgccggcaa cctcacctct 240
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ctggcggtgg ccggcacctc cctcaccatg caatcagagg ccccccctgac agtccaagat 420
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cagacctcgg ccccgctgac ggccgctgac agcagcacc tcaccgttag cgccacacca 540
cccatcagtg taagcagtg aagtttgggc ttagacatgg aagacccaat gtatactcat 600
gatggaaaac tgggaataag aattgggggc cactgagag tagtagacag cctgcacaca 660
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cgaattgatg caaatggcca acttatcctt gatgtggcat acccatttga tgctcaaaac 840
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aacctcgcat cataccccaa gacacagagc cagactgcaa aaaacaacat tgtaagtcat 1440

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gtttacttga atggggacaa atccaaaccc atgaccctta ccattaccct caatggaact 1500
aatgaatcca gtgaaactag ccaggtgagt cactactcca tgtcattttac gtgggcttgg 1560
gagagtgggc aatatgccac cgaaaccttt gccaccaatt cctttacctt ctcttacatt 1620
gctgaacaat aa 1632

```

<210> 14

<211> 1632

<212> DNA

<213> Chimpanzee Adenovirus-ChAd 17 Fiber

<400> 14

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aatgaatcca gtgaaactag tcaggtgagt cactactcca tgtcattttac atgggcttgg 1560
gaaagcgggc aatatgccac tgaaaccttt gccaccaact ccttcacctt ttcttacatt 1620
gctgaacaat aa 1632

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<210> 15

<211> 1632

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 19 Fiber

<400> 15

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gagagccccc ccggggctct gtctctgaac ctggccgagc ccctgggtcac ttcccacggc 180
atgctcgccc tgaaaatggg aagtggcctc tccctggacg acgcgggcaa cctcactct 240
caagatgtca ccaccactac ccctccctcg aaaaaaacca agaccaacct cagcctagaa 300
acctcagccc ccctgactgt gagcacctca ggcgcctca ccctagcagc cgccgcccc 360
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gcaaaactca ccctggccac caaggcccc ctgaccgtgt ctgaaggcaa actggccttg 480
cagacctcgg ccccgctgac ggccgctgac agcagcaccc tcaccgtag cgccacacca 540
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cgaattgatg caaatggcca acttatcctt gatgtggcat acccatttga tgctcaaaac 840
aatctcagcc ttagacttgg tcagggaccc ctgtatgtaa acacagacca caacctagat 900

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gtttacttga atggggacaa atccaaaccc atgaccctta ccattaccct caatggaact 1500
aatgaatcca gtgaaactag ccaggtgagt cactactcca tgtcatttac gtgggcttgg 1560
gagagtgggc aatatgccac cgaaaccttt gccaccaatt cttttacctt ctcttacatt 1620
gctgaacaat aa 1632

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<210> 16

<211> 2865

<212> DNA

<213> Chimp0anzee Adenovirus- ChAd 20 Hexon

<400> 16

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ctgagtaaca agtttaggaa ccccacggtg gcgcccacgc acgatgtgac caccgaccgg 180
tctcagcgcc tgacgctgcg gttcattccc gtggaccgcg aggacaccgc gtactcgtac 240
aaggcgcggt tcaccctggc cgtggggcgac aaccgcgtgc tggacatggc ctccacctac 300
tttgacatcc gcgggggtgt ggaccgggggt cccactttca agccctactc tggcaccgcc 360
tacaactccc tggcccccaa gggcgctccc aaccatgcg agtgggatga ggctgctact 420
gcccttgaca ttgatttgaa cgcagaagac gatgaagaaa gcgacgaagc tcaaggggaa 480
gcagatcagc agaaaactca tgtattttggc caggcgccct actccggaca gaacattaca 540
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| | | | | | | |
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| ggacaggcct | accccgccaa | cttcccctac | ccgctcatag | gcaagaccgc | ggtcgacagc | 2580 |
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<210> 17

<211> 2823

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 4 Hexon

<400> 17

| | | | | | | |
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| tcggagtacc | tgagtccggg | tctgggtgcag | ttcgcccgcg | ccacagacac | ctacttcagt | 120 |
| ctggggaaca | agtttaggaa | ccccacggtg | gcgcccacgc | acgatgtgac | caccgaccgc | 180 |
| agccagcggc | tgacgctgcg | cttcgtgccc | gtggaccgcg | aggacaacac | ctactcgtac | 240 |
| aaagtgcgct | acacgctggc | cgtggggcgac | aaccgcgtgc | tgacatggc | cagcacctac | 300 |
| tttgacatcc | gcggcgtgct | ggatcggggc | cctagcttca | aacctactc | cggcaccgcc | 360 |
| tacaacagcc | tggctcccaa | gggagcgccc | aattccagcc | agtgggagca | aaaaaagact | 420 |
| ggcaataatg | ccaatggaga | tacggagaat | gtcacttatg | gtgtagctgc | catgggagga | 480 |
| attgacatcg | ataaaaaatg | ccttcaaatt | ggaaccgatg | acaccaaaga | tgacgataat | 540 |
| gaaatttatg | cagacaaaac | atatcagcct | gagccgcaaa | taggagagga | aaactggcaa | 600 |
| gaaacatatt | cctactatgg | aggtagagct | cttaaaaaag | ataccaaaat | gaagccatgc | 660 |
| tatggctcat | ttgccagacc | taccaatgtg | aaaggaggac | aggcaaaaat | aaaaacagat | 720 |
| ggagatgtta | agtcatttga | catagaccta | gccttctttg | atattcccaa | ttctggcgcg | 780 |
| ggaaatggca | caaatgttaa | cgatgatcca | gatatggtta | tgtatacaga | aaatgtaaat | 840 |
| ctggaaaaccc | cagatactca | tattgtgtac | aaaccaggaa | cttcagatga | cagctcaaag | 900 |
| gtcaacttgt | gtcagcaatc | catgcctaac | agaccaatt | atattggctt | cagagacaat | 960 |
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taa

2823

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<211> 2823

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 5 Hexon

<400> 18

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<210> 19

<211> 2823

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 7 Hexon

<400> 19

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<211> 2793

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 9 Hexon

<400> 20

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<211> 2793

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 10 Hexon

<400> 21

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<210> 22

<211> 2883

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 11 Hexon

<400> 22

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| atgctcagga | acgacaccaa | cgaccagtcc | ttcaatgact | acctctccgc | cgccaacatg | 1980 |
| ctctacccca | tccccgcaa | cgccaccaac | gtccccatct | ccatccccctc | gcgcaactgg | 2040 |
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<211> 2835

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 16 Hexon

<400> 23

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| ctgggggaaca | agtttaggaa | ccccacggtg | gcgcccacgc | acgatgtgac | caccgaccgc | 180 |
| agccagcggc | tgacgtgcg | cttcgtgccc | gtggaccgcg | aggacaacac | ctactcgtag | 240 |
| aaagtgcgct | acacgctggc | cgtgggcgac | aaccgcgtgc | tggaatggc | cagcacctac | 300 |
| tttgacatcc | gcggcgtgct | ggaccggggc | cctagcttca | aaccctactc | cggcaccgcc | 360 |
| tacaacagcc | tgcccccaa | gggagctccc | aattccagtc | agtgggagca | gacggagaac | 420 |
| gggggcgag | aggctacgac | taaaacacac | acctatggag | ttgccccaat | gggtggaact | 480 |
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| atztatgctg | ataaaacatt | ccaacctgag | cctcagatag | gagaggaaaa | ctggcaagaa | 600 |
| actgaaagct | tttatggcgg | tagggctctt | aagaaagaca | caaacatgaa | gccttggtat | 660 |
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| aactttattg | ggctcatgta | ttacaacagc | actggcaata | tggtgtgtgt | ggccggtcag | 1020 |
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| aactattgct | tccccctgga | tgggtctggc | actaacgccg | cttaccaagg | tgtgaaagta | 1260 |
| aaaaatggtc | aagatggtga | tgttgagagc | gaatgggaaa | aagatgatac | tgtcgcagct | 1320 |
| cgaaatcaat | tatgcaaggg | caacattttt | gccatggaga | tcaatctcca | ggccaacctg | 1380 |

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<211> 2883

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<211> 2877

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<223> Oligomer

<400> 40

atgacgcgat cgctgatatc ctataataat aaaacgcaga ctttg

45

<210> 41

<211> 2880

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 3 Hexon

<400> 41

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ctgagtaaca agtttaggaa cccacagggt gcgcccacgc acgatgtgac caccgaccgg 180
tctcagcgcc tgacgctgcg gttcattccc gtggaccgcg aggacaccgc gtactcgtac 240
aaggcgcggt tcaccctggc cgtgggcgac aaccgcgtgc tggacatggc ctccacctac 300
tttgacatcc gcggggtgct ggaccggggt cccactttca agccctactc tggcaccgcc 360
tacaactccc tggcccccaa gggcgctccc aactcctgcg agtgggagca agaggaaact 420
caggcagttg aagaagcagc agaagaggaa gaagaagatg ctgacggtca agctgaggaa 480
gagcaagcag ctacaaaaaa gactcatgta tatgctcagg ctcccccttc tggcgaaaaa 540
attagtaaaag atgggtctgca aataggaacg gacgctacag ctacagaaca aaaacctatt 600
tatgcagacc ctacattcca gcccgaaccc caaatcgggg agtcccagtg gaatgaggca 660
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cccacccttc tctatgttct gttcgaagtc tttgacgtgg tccgggtcca ccagccgcac 2820
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<210> 42

<211> 1683

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 3 Fiber

<400> 42

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cctccctccg tccctttcct caccctcccc ttcgtgtctc ccgatggatt ccaagaaagc 180
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gccctgaaaa tgggaagtgg cctctccctg gacgacgtg gcaacctcac ctctcaagat 300
atcaccaccg ctagccctcc cctcaaaaaa accaagacca acctcagcct agaaacctca 360
tcccccttaa ctgtaagcac ctcaggcgcc ctccaccgtg cagccgcccgc tcccctggca 420
gtggccggca cctccctcac catgcaatca gaggccccc tgacagtaca ggatgcaaaa 480
ctcaccctgg ccaccaaagg ccccttgacc gtgtctgaag gcaaaactggc cttgcaaaaca 540
tcggccccgc tgacggccgc tgacagcagc acctcaccg tttagcggcc accaccaatt 600
aatgtaagca gtggaagttt aggcttagac atggaagacc ctatgtatac tcacgatgga 660
aaactgggaa taagaattgg ggggtccacta agagttagtag acagcttgca cacactcact 720
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gccctaggtt atgacacatc aggaaatcta caattgagag ctgcaggagg tatgccaatt 840
gatgcaaatg gccaaacttat ccttaattgtg gcatacccat ttgatgctca gaacaatctc 900
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tccagtgaag ctagccagggt gagtcactac tccatgtcat ttacatgggc ttgggaaagt 1620
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caa
1683

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<210> 43

<211> 2859

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 6 Hexon

<400> 43

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atgtatgtcc gccgaccaga aggaagaggc gcgtcgccga gttgcaagat ggccacccca 60
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agtccgggtc ttggtgcagtt cgcccgccgc acagacacct acttcagtct gggaacaag 180
tttaggaacc ccacgggtgc gccacgcgac gatgtgacca ccgaccgag cagcgctg 240
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acgctggccg tgggcgacaa ccgctgtctg gacatggcca gcacctact tgacatccgc 360
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gctcccaagg gagcgcccaa cacctcacag tggataacca aagacaatgg aactgataag 480
acatacagtt ttggaaatgc tccagtcaga ggattggaca ttacagaaga ggggtctcaa 540
ataggacccg atgagtcagg gggtgaaagc aagaaaattt ttgcagacaa aacctatcag 600
cctgaacctc agcttgaga tgaggaatgg catgatacta ttggagctga agacaagtat 660
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ccaactaatg ctaagggagg tcaggctaaa agcagaacca aggacgatgg cactactgag 780
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gatacattcc agggaattaa ggttaaaact accaataacg gaacagcaaa tgctacagag 1320
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acctacgatt acatgaacgg ccgcgtggta gcgcctcgc tggaggacgc ctacatcaac 1560
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<210> 44

<211> 1335

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 6 Fiber

<400> 44

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gaaaagcccc tgggggtggt gtccctgcga ctggccgatc ccgtcaccac caagaacggg 180
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attaattgca aaagaggtat ctatgtcact accacaaaag atgcaactgga gattaatatc 600
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aaaggcctac agttcggcac ttcaagcact gaaacagatg ttaaaaatgc ttttccactc 720
caagtaaaac ttggagctgg tcttacattt gacagcacag gtgccattgt tgcttggaac 780
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ataattacat ttaatgaaac cagtgatgaa tctgtactt attgcattaa ctttcagtgg 1260
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tacattgcta aagaa 1335

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<210> 45

<211> 22

<212> DNA

<213> Artificial Sequence

<220>
<223> Primer

<400> 45
tgtcctacca rctcttgctt ga

22

<210> 46
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 46
gtggaarggc acgtagcg

18

<210> 47
<211> 9
<212> PRT
<213> HIV gag CD8 Epitope

<220>
<223> Primer

<400> 47
Ala Met Gln Met Leu Lys Glu Thr Ile
1 5

<210> 48
<211> 578
<212> PRT
<213> Chimpanzee Adenovirus- ChAd 20 Fiber

<400> 48
Met Lys Arg Thr Lys Thr Ser Asp Glu Ser Phe Asn Pro Val Tyr Pro
1 5 10 15
Tyr Asp Thr Glu Ser Gly Pro Pro Ser Val Pro Phe Leu Thr Pro Pro
20 25 30
Phe Val Ser Pro Asp Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45
Leu Asn Leu Ala Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
50 55 60
Lys Met Gly Ser Gly Leu Ser Leu Asp Asp Ala Gly Asn Leu Thr Ser
65 70 75 80
Gln Asp Ile Thr Thr Ala Ser Pro Pro Leu Lys Lys Thr Lys Thr Asn
85 90 95
Leu Ser Leu Glu Thr Ser Ser Pro Leu Thr Val Ser Thr Ser Gly Ala
100 105 110
Leu Thr Val Ala Ala Ala Pro Leu Ala Val Ala Gly Thr Ser Leu
115 120 125
Thr Met Gln Ser Glu Ala Pro Leu Thr Val Gln Asp Ala Lys Leu Thr
130 135 140
Leu Ala Thr Lys Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu
145 150 155 160
Gln Thr Ser Ala Pro Leu Thr Ala Ala Asp Ser Ser Thr Leu Thr Val
165 170 175
Ser Ala Thr Pro Pro Leu Ser Thr Ser Asn Gly Ser Leu Gly Ile Asp
180 185 190
Met Gln Ala Pro Ile Tyr Thr Thr Asn Gly Lys Leu Gly Leu Asn Phe
195 200 205

Gly Ala Pro Leu His Val Val Asp Ser Leu Asn Ala Leu Thr Val Val
 210 215 220
 Thr Gly Gln Gly Leu Thr Ile Asn Gly Thr Ala Leu Gln Thr Arg Val
 225 230 235 240
 Ser Gly Ala Leu Asn Tyr Asp Thr Ser Gly Asn Leu Glu Leu Arg Ala
 245 250 255
 Ala Gly Gly Met Arg Val Asp Ala Asn Gly Gln Leu Ile Leu Asp Val
 260 265 270
 Ala Tyr Pro Phe Asp Ala Gln Asn Asn Leu Ser Leu Arg Leu Gly Gln
 275 280 285
 Gly Pro Leu Phe Val Asn Ser Ala His Asn Leu Asp Val Asn Tyr Asn
 290 295 300
 Arg Gly Leu Tyr Leu Phe Thr Ser Gly Asn Thr Lys Lys Leu Glu Val
 305 310 315 320
 Asn Ile Lys Thr Ala Lys Gly Leu Ile Tyr Asp Asp Thr Ala Ile Ala
 325 330 335
 Ile Asn Ala Gly Asp Gly Leu Gln Phe Asp Ser Gly Ser Asp Thr Asn
 340 345 350
 Pro Leu Lys Thr Lys Leu Gly Leu Gly Leu Asp Tyr Asp Ser Ser Arg
 355 360 365
 Ala Ile Ile Ala Lys Leu Gly Thr Gly Leu Ser Phe Asp Asn Thr Gly
 370 375 380
 Ala Ile Thr Val Gly Asn Lys Asn Asp Asp Lys Leu Thr Leu Trp Thr
 385 390 395 400
 Thr Pro Asp Pro Ser Pro Asn Cys Arg Ile Tyr Ser Glu Lys Asp Ala
 405 410 415
 Lys Phe Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Val Leu Ala Ser
 420 425 430
 Val Ser Val Leu Ser Val Lys Gly Ser Leu Ala Pro Ile Ser Gly Thr
 435 440 445
 Val Thr Ser Ala Gln Ile Val Leu Arg Phe Asp Glu Asn Gly Val Leu
 450 455 460
 Leu Ser Asn Ser Ser Leu Asp Pro Gln Tyr Trp Asn Tyr Arg Lys Gly
 465 470 475 480
 Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly Phe Met Pro
 485 490 495
 Asn Leu Thr Ala Tyr Pro Lys Thr Gln Ser Gln Thr Ala Lys Ser Asn
 500 505 510
 Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Met Thr
 515 520 525
 Leu Thr Ile Thr Leu Asn Gly Thr Asn Glu Thr Gly Asp Ala Thr Val
 530 535 540
 Ser Thr Tyr Ser Met Ser Phe Ser Trp Asn Trp Asn Gly Ser Asn Tyr
 545 550 555 560
 Ile Asn Glu Thr Phe Gln Thr Asn Ser Phe Thr Phe Ser Tyr Ile Ala
 565 570 575
 Gln Glu

<210> 49

<211> 425

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 4 Fiber

<400> 49

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1 5 10 15
 Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20 25 30
 Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35 40 45

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Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50      55      60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65      70      75      80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
      85      90      95
Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
      100      105      110
Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
      115      120      125
Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
      130      135      140
Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
145      150      155      160
Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
      165      170      175
Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
      180      185      190
Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
      195      200      205
Ser Thr Glu Thr Gly Val Asp Ala Tyr Pro Ile Gln Val Lys Leu
      210      215      220
Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
225      230      235      240
Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
      245      250      255
Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
      260      265      270
Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
      275      280      285
Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
      290      295      300
Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
305      310      315      320
Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
      325      330      335
Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
      340      345      350
Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
      355      360      365
Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
      370      375      380
Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
385      390      395      400
Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
      405      410      415
Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
      420      425

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<210> 50

<211> 444

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 5 Fiber

<400> 50

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Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
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Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
      20      25      30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
      35      40      45

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Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50      55      60
Lys Leu Gly Asp Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65      70      75      80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
      85      90      95
Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Asn Asn Asn Gly Lys Leu
      100      105      110
Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
      115      120      125
Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Asn
      130      135      140
Gly Ala Leu Val Ala Gln Leu Ala Tyr Pro Leu Val Phe Asn Thr Ala
145      150      155      160
Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
      165      170      175
Asn Arg Leu Asn Ile Asn Cys Lys Arg Gly Ile Tyr Val Thr Thr Thr
      180      185      190
Lys Asp Ala Leu Glu Ile Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
      195      200      205
Ile Gly Asn Ala Ile Gly Val Asn Ile Asp Thr Lys Lys Gly Leu Gln
      210      215      220
Phe Gly Thr Ser Ser Thr Glu Thr Asp Val Lys Asn Ala Phe Ser Leu
225      230      235      240
Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
      245      250      255
Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
      260      265      270
Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys Asp Ala Lys Leu
      275      280      285
Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
      290      295      300
Leu Leu Ala Val Ser Gly Ser Leu Ala Pro Ile Thr Gly Ala Val Arg
305      310      315      320
Thr Ala Leu Val Ser Leu Lys Phe Asn Ala Asn Gly Ala Leu Leu Asp
      325      330      335
Lys Ser Thr Leu Asn Lys Glu Tyr Trp Asn Tyr Arg Gln Gly Asp Leu
      340      345      350
Ile Pro Gly Thr Pro Tyr Thr His Ala Val Gly Phe Met Pro Asn Lys
      355      360      365
Lys Ala Tyr Pro Lys Asn Thr Thr Ala Ala Ser Lys Ser His Ile Val
      370      375      380
Gly Asp Val Tyr Leu Asp Gly Asp Ala Asp Lys Pro Leu Ser Leu Ile
385      390      395      400
Ile Thr Phe Asn Glu Thr Asp Asp Glu Thr Cys Asp Tyr Cys Ile Asn
      405      410      415
Phe Gln Trp Lys Trp Gly Ala Asp Gln Tyr Lys Asp Lys Thr Leu Ala
      420      425      430
Thr Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
      435      440

```

<210> 51

<211> 445

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 7 Fiber

<400> 51

```

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1      5      10      15
Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
      20      25      30

```

```

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
   35         40         45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
   50         55         60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
   65         70         75         80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
           85         90         95
Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Asn Asn Asn Gly Lys Leu
           100        105        110
Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
           115        120        125
Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Thr
           130        135        140
Gly Ala Leu Val Ala Gln Leu Ala Ala Pro Leu Ala Phe Asp Ser Asn
   145         150         155         160
Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
           165         170         175
Asn Arg Leu Asn Ile Asn Cys Asn Arg Gly Leu Tyr Val Thr Thr Thr
           180        185        190
Lys Asp Ala Leu Glu Thr Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
           195        200        205
Ile Gly Asn Ala Met Gly Val Asn Ile Asp Thr Gln Lys Gly Leu Gln
           210        215        220
Phe Gly Thr Thr Ser Thr Val Ala Asp Val Lys Asn Ala Tyr Pro Ile
   225         230         235         240
Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
           245         250         255
Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
           260        265        270
Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Asp Lys Asp Ala Lys Leu
           275        280        285
Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
           290        295        300
Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Gln Val
   305         310         315         320
Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
           325         330         335
Thr Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
           340        345        350
Val Thr Pro Ala Glu Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
           355        360        365
Leu Lys Ala Tyr Pro Lys Asn Thr Ser Gly Ala Ala Lys Ser His Ile
           370        375        380
Val Gly Lys Val Tyr Leu His Gly Asp Thr Asp Lys Pro Leu Asp Leu
   385         390         395         400
Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
           405         410         415
Asn Phe Gln Trp Lys Trp Asp Ser Thr Lys Tyr Thr Gly Glu Thr Leu
           420        425        430
Ala Thr Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
           435        440        445

```

<210> 52

<211> 425

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 9 Fiber

<400> 52

```

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
  1             5             10             15

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```

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
      20      25      30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
      35      40      45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
      50      55      60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
      65      70      75      80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
      85      90      95
Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
      100      105      110
Ala Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
      115      120      125
Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
      130      135      140
Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
      145      150      155      160
Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
      165      170      175
Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
      180      185      190
Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
      195      200      205
Ser Thr Glu Thr Gly Val Asp Asp Ala Tyr Pro Ile Gln Val Lys Leu
      210      215      220
Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
      225      230      235      240
Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
      245      250      255
Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
      260      265      270
Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
      275      280      285
Gly Ser Gly Asp Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
      290      295      300
Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
      305      310      315      320
Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
      325      330      335
Thr Pro Tyr Ala Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
      340      345      350
Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
      355      360      365
Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
      370      375      380
Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
      385      390      395      400
Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
      405      410      415
Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
      420      425

```

<210> 53

<211> 425

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 10 Fiber

<400> 53

```

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
  1           5           10           15

```

```

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
20 25 30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
35 40 45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
50 55 60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65 70 75 80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
85 90 95
Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
100 105 110
Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
115 120 125
Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
130 135 140
Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
145 150 155 160
Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
165 170 175
Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
180 185 190
Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
195 200 205
Ser Thr Glu Thr Gly Val Asp Asp Ala Tyr Pro Ile Gln Val Lys Leu
210 215 220
Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
225 230 235 240
Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
245 250 255
Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
260 265 270
Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
275 280 285
Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
290 295 300
Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
305 310 315 320
Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
325 330 335
Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
340 345 350
Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
355 360 365
Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
370 375 380
Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
385 390 395 400
Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
405 410 415
Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
420 425

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<210> 54

<211> 578

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 11 Fiber

<400> 54

```

Met Lys Arg Thr Lys Thr Ser Asp Glu Ser Phe Asn Pro Val Tyr Pro
1 5 10 15

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Tyr | Asp | Thr | Glu | Asn | Gly | Pro | Pro | Ser | Val | Pro | Phe | Leu | Thr | Pro | Pro | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Phe | Val | Ser | Pro | Asp | Gly | Phe | Gln | Glu | Ser | Pro | Pro | Gly | Val | Leu | Ser | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Leu | Asn | Leu | Ala | Glu | Pro | Leu | Val | Thr | Ser | His | Gly | Met | Leu | Ala | Leu | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Lys | Met | Gly | Ser | Gly | Leu | Ser | Leu | Asp | Asp | Ala | Gly | Asn | Leu | Thr | Ser | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| Gln | Asp | Val | Thr | Thr | Thr | Thr | Pro | Pro | Leu | Lys | Lys | Thr | Lys | Thr | Asn | |
| | | | 85 | | | | | | 90 | | | | | 95 | | |
| Leu | Ser | Leu | Glu | Thr | Ser | Ala | Pro | Leu | Thr | Val | Ser | Thr | Ser | Gly | Ala | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Leu | Thr | Leu | Ala | Ala | Ala | Val | Pro | Leu | Ala | Val | Ala | Gly | Thr | Ser | Leu | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| Thr | Met | Gln | Ser | Glu | Ala | Pro | Leu | Thr | Val | Gln | Asp | Ala | Lys | Leu | Thr | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Leu | Ala | Thr | Lys | Gly | Pro | Leu | Thr | Val | Ser | Glu | Gly | Lys | Leu | Ala | Leu | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Gln | Thr | Ser | Ala | Pro | Leu | Thr | Ala | Ala | Asp | Ser | Ser | Thr | Leu | Thr | Ile | |
| | | | 165 | | | | | | 170 | | | | | | 175 | |
| Ser | Ala | Thr | Pro | Pro | Leu | Ser | Thr | Ser | Asn | Gly | Ser | Leu | Gly | Ile | Asp | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Met | Gln | Ala | Pro | Ile | Tyr | Thr | Thr | Asn | Gly | Lys | Leu | Gly | Leu | Asn | Phe | |
| | 195 | | | | | | 200 | | | | | 205 | | | | |
| Gly | Ala | Pro | Leu | His | Val | Val | Asp | Ser | Leu | Asn | Ala | Leu | Thr | Val | Val | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| Thr | Gly | Gln | Gly | Leu | Thr | Ile | Asn | Gly | Thr | Ala | Leu | Gln | Thr | Arg | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| Ser | Gly | Ala | Leu | Asn | Tyr | Asp | Ser | Ser | Gly | Asn | Leu | Glu | Leu | Arg | Ala | |
| | | | 245 | | | | | | 250 | | | | | 255 | | |
| Ala | Gly | Gly | Met | Arg | Val | Asp | Ala | Asn | Gly | Lys | Leu | Ile | Leu | Asp | Val | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| Ala | Tyr | Pro | Phe | Asp | Ala | Gln | Asn | Asn | Leu | Ser | Leu | Arg | Leu | Gly | Gln | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| Gly | Pro | Leu | Phe | Val | Asn | Ser | Ala | His | Asn | Leu | Asp | Val | Asn | Tyr | Asn | |
| | 290 | | | | 295 | | | | | | 300 | | | | | |
| Arg | Gly | Leu | Tyr | Leu | Phe | Thr | Ser | Gly | Asn | Thr | Lys | Lys | Leu | Glu | Val | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| Asn | Ile | Lys | Thr | Ala | Lys | Gly | Leu | Ile | Tyr | Asp | Asp | Thr | Ala | Ile | Ala | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| Ile | Asn | Pro | Gly | Asp | Gly | Leu | Glu | Phe | Gly | Ser | Gly | Ser | Asp | Thr | Asn | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| Pro | Leu | Lys | Thr | Lys | Leu | Gly | Leu | Gly | Leu | Glu | Tyr | Asp | Ser | Ser | Arg | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| Ala | Ile | Ile | Ala | Lys | Leu | Gly | Thr | Gly | Leu | Ser | Phe | Asp | Asn | Thr | Gly | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| Ala | Ile | Thr | Val | Gly | Asn | Lys | Asn | Asp | Asp | Lys | Leu | Thr | Leu | Trp | Thr | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| Thr | Pro | Asp | Pro | Ser | Pro | Asn | Cys | Arg | Ile | Tyr | Ser | Glu | Lys | Asp | Ala | |
| | | | 405 | | | | | | 410 | | | | | 415 | | |
| Lys | Phe | Thr | Leu | Val | Leu | Thr | Lys | Cys | Gly | Ser | Gln | Val | Leu | Ala | Ser | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| Val | Ser | Val | Leu | Ser | Val | Lys | Gly | Ser | Leu | Ala | Pro | Ile | Ser | Gly | Thr | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| Val | Thr | Ser | Ala | Gln | Ile | Ile | Leu | Arg | Phe | Asp | Glu | Asn | Gly | Val | Leu | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| Leu | Ser | Asn | Ser | Ser | Leu | Asp | Pro | Gln | Tyr | Trp | Asn | Tyr | Arg | Lys | Gly | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Asp | Leu | Thr | Glu | Gly | Thr | Ala | Tyr | Thr | Asn | Ala | Val | Gly | Phe | Met | Pro | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |

```

Asn Leu Thr Ala Tyr Pro Lys Thr Gln Ser Gln Thr Ala Lys Ser Asn
      500      505      510
Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Met Ile
      515      520      525
Leu Thr Ile Thr Leu Asn Gly Thr Asn Glu Thr Gly Asp Ala Thr Val
      530      535      540
Ser Thr Tyr Ser Met Ser Phe Ser Trp Asn Trp Asn Gly Ser Asn Tyr
545      550      555      560
Ile Asn Glu Thr Phe Gln Thr Asn Ser Phe Thr Phe Ser Tyr Ile Ala
      565      570      575
Gln Glu

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```

<210> 55
<211> 442
<212> PRT
<213> Chimpanzee Adenovirus- ChAd 16 Fiber

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```

<400> 55
Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1      5      10      15
Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
      20      25      30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
      35      40      45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
      50      55      60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65      70      75      80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
      85      90      95
Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Thr Lys Asp Gly Lys Leu
      100      105      110
Thr Met Gln Val Thr Ala Pro Leu Lys Leu Ala Asn Thr Ala Ile Leu
      115      120      125
Asn Thr Leu Ala Met Ala Tyr Gly Asn Gly Leu Gly Leu Ser Asn Asn
130      135      140
Ala Leu Thr Val Gln Leu Gln Ser Pro Leu Thr Phe Asn Asn Ser Lys
145      150      155      160
Val Ala Ile Asn Leu Gly Asn Gly Pro Leu Asn Val Thr Ser Asn Arg
      165      170      175
Leu Ser Ile Asn Cys Lys Arg Gly Val Tyr Val Thr Thr Thr Gly Asp
      180      185      190
Ala Ile Glu Thr Asn Ile Ser Trp Ser Asn Ala Ile Lys Phe Ile Gly
      195      200      205
Asn Ala Met Gly Val Asn Ile Asp Thr Asn Lys Gly Leu Gln Phe Gly
210      215      220
Thr Thr Ser Thr Val Thr Asp Val Thr Asn Ala Phe Pro Ile Gln Val
225      230      235      240
Lys Leu Gly Ala Gly Leu Ala Phe Asp Ser Thr Gly Ala Ile Val Ala
      245      250      255
Trp Asn Lys Glu Asp Asp Ser Leu Thr Leu Trp Thr Thr Pro Asp Pro
      260      265      270
Ser Pro Asn Cys Lys Ile Ala Ser Asp Lys Asp Ala Lys Leu Thr Leu
      275      280      285
Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser Leu Leu
290      295      300
Ala Val Ser Gly Ser Leu Ala Pro Ile Thr Gly Ala Val Ser Thr Ala
305      310      315      320
Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Ala Leu Leu Glu Lys Ser
      325      330      335

```

```

Thr Leu Asn Arg Glu Tyr Trp Asn Tyr Arg Gln Gly Asp Leu Ile Pro
      340      345      350
Gly Thr Pro Tyr Thr His Ala Val Gly Phe Met Pro Asn Lys Lys Ala
      355      360      365
Tyr Pro Lys Asn Thr Thr Ala Ala Ser Lys Ser His Ile Val Gly Glu
      370      375      380
Val Tyr Leu Asp Gly Asp Ala Asp Lys Pro Leu Ser Leu Ile Ile Thr
      385      390      395      400
Phe Asn Glu Thr Asp Asp Glu Ser Cys Asp Tyr Cys Met Asn Phe Gln
      405      410      415
Trp Lys Trp Gly Ala Asp Gln Tyr Lys Asp Lys Thr Leu Ala Thr Ser
      420      425      430
Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
      435      440

```

<210> 56

<211> 543

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 17 Fiber

<400> 56

```

Met Lys Arg Thr Lys Thr Ser Asp Glu Ser Phe Asn Pro Val Tyr Pro
  1      5      10      15
Tyr Asp Thr Glu Ser Gly Pro Pro Ser Val Pro Phe Leu Thr Pro Pro
      20      25      30
Phe Val Ser Pro Asp Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
      35      40      45
Leu Asn Leu Ala Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
      50      55      60
Lys Met Gly Ser Gly Leu Ser Leu Asp Asp Ala Gly Asn Leu Thr Ser
      65      70      75      80
Gln Asp Ile Thr Ser Thr Thr Pro Pro Leu Lys Lys Thr Lys Thr Asn
      85      90      95
Leu Ser Leu Glu Thr Ser Ser Pro Leu Thr Val Ser Thr Ser Gly Ala
      100      105      110
Leu Thr Val Ala Ala Ala Ala Pro Leu Ala Val Ala Gly Thr Ser Leu
      115      120      125
Thr Met Gln Ser Glu Ala Pro Leu Ala Val Gln Asp Ala Lys Leu Thr
      130      135      140
Leu Ala Thr Lys Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu
      145      150      155      160
Gln Thr Ser Ala Pro Leu Thr Ala Ala Asp Ser Ser Thr Leu Thr Val
      165      170      175
Ser Ser Thr Pro Pro Ile Ser Val Ser Ser Gly Ser Leu Gly Leu Asp
      180      185      190
Met Glu Asp Pro Met Tyr Thr His Asp Gly Lys Leu Gly Ile Arg Ile
      195      200      205
Gly Gly Pro Leu Arg Val Val Asp Ser Leu His Thr Leu Thr Val Val
      210      215      220
Thr Gly Asn Gly Leu Thr Val Asp Asn Asn Ala Leu Gln Thr Arg Val
      225      230      235      240
Thr Gly Ala Leu Gly Tyr Asp Thr Ser Gly Asn Leu Gln Leu Arg Ala
      245      250      255
Ala Gly Gly Met Arg Ile Asp Ala Asn Gly Gln Leu Ile Leu Asp Val
      260      265      270
Ala Tyr Pro Phe Asp Ala Gln Asn Asn Leu Ser Leu Arg Leu Gly Gln
      275      280      285
Gly Pro Leu Tyr Val Asn Thr Asp His Asn Leu Asp Leu Asn Cys Asn
      290      295      300
Arg Gly Leu Thr Thr Thr Thr Thr Asn Asn Thr Lys Lys Leu Glu Thr
      305      310      315      320

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```

Lys Ile Ser Ser Gly Leu Asp Tyr Asp Thr Asn Gly Ala Val Ile Ile
      325      330
Lys Leu Gly Thr Gly Leu Ser Phe Asp Asn Thr Gly Ala Leu Thr Val
      340      345      350
Gly Asn Thr Gly Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro
      355      360      365
Ser Pro Asn Cys Arg Ile His Ser Asp Lys Asp Cys Lys Phe Thr Leu
      370      375      380
Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Ser Val Ala Ala Leu
      385      390      395      400
Ala Val Ser Gly Asn Leu Ala Ser Ile Thr Gly Thr Val Ala Ser Val
      405      410      415
Thr Ile Phe Leu Arg Phe Asp Gln Asn Gly Val Leu Met Glu Asn Ser
      420      425      430
Ser Leu Asp Lys Gln Tyr Trp Asn Phe Arg Asn Gly Asn Ser Thr Asn
      435      440      445
Ala Ala Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Ala Ala
      450      455      460
Tyr Pro Lys Thr Gln Ser Gln Thr Ala Lys Asn Asn Ile Val Ser Gln
      465      470      475      480
Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Met Thr Leu Thr Ile Thr
      485      490      495
Leu Asn Gly Thr Asn Glu Ser Ser Glu Thr Ser Gln Val Ser His Tyr
      500      505      510
Ser Met Ser Phe Thr Trp Ala Trp Glu Ser Gly Gln Tyr Ala Thr Glu
      515      520      525
Thr Phe Ala Thr Asn Ser Phe Thr Phe Ser Tyr Ile Ala Glu Gln
      530      535      540

```

<210> 57

<211> 543

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 19 Fiber

<400> 57

```

Met Lys Arg Thr Lys Thr Ser Asp Lys Ser Phe Asn Pro Val Tyr Pro
  1      5      10      15
Tyr Asp Thr Glu Asn Gly Pro Pro Ser Val Pro Phe Leu Thr Pro Pro
      20      25      30
Phe Val Ser Pro Asp Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
      35      40      45
Leu Asn Leu Ala Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
      50      55      60
Lys Met Gly Ser Gly Leu Ser Leu Asp Asp Ala Gly Asn Leu Thr Ser
      65      70      75      80
Gln Asp Val Thr Thr Thr Thr Pro Pro Leu Lys Lys Thr Lys Thr Asn
      85      90      95
Leu Ser Leu Glu Thr Ser Ala Pro Leu Thr Val Ser Thr Ser Gly Ala
      100      105      110
Leu Thr Leu Ala Ala Ala Ala Pro Leu Ala Val Ala Gly Thr Ser Leu
      115      120      125
Thr Met Gln Ser Glu Ala Pro Leu Thr Val Gln Asp Ala Lys Leu Thr
      130      135      140
Leu Ala Thr Lys Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu
      145      150      155      160
Gln Thr Ser Ala Pro Leu Thr Ala Ala Asp Ser Ser Thr Leu Thr Val
      165      170      175
Ser Ala Thr Pro Pro Ile Ser Val Ser Ser Gly Ser Leu Gly Leu Asp
      180      185      190
Met Glu Asp Pro Met Tyr Thr His Asp Gly Lys Leu Gly Ile Arg Ile
      195      200      205

```

| | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|-----|---------|
| Gly 210 | Pro | Leu | Arg | Val | Val 215 | Asp | Ser | Leu | His | Thr 220 | Leu | Thr | Val | Val | |
| Thr 225 | Gly | Asn | Gly | Ile | Ala 230 | Val | Asp | Asn | Asn | Ala 235 | Leu | Gln | Thr | Arg | Val 240 |
| Thr | Gly | Ala | Leu | Gly 245 | Tyr | Asp | Thr | Ser | Gly 250 | Asn | Leu | Gln | Leu | Arg | Ala 255 |
| Ala | Gly | Gly | Met 260 | Arg | Ile | Asp | Ala | Asn 265 | Gly | Gln | Leu | Ile | Leu | Asp | Val 270 |
| Ala | Tyr | Pro 275 | Phe | Asp | Ala | Gln | Asn 280 | Asn | Leu | Ser | Leu | Arg | Leu | Gly | Gln 285 |
| Gly | Pro 290 | Leu | Tyr | Val | Asn | Thr 295 | Asp | His | Asn | Leu | Asp 300 | Leu | Asn | Cys | Asn 305 |
| Arg 305 | Gly | Leu | Thr | Thr | Thr 310 | Thr | Thr | Asn | Asn | Thr 315 | Lys | Lys | Leu | Glu | Thr 320 |
| Lys | Ile | Gly | Ser | Gly 325 | Leu | Asp | Tyr | Asp | Thr 330 | Asn | Gly | Ala | Val | Ile | Ile 335 |
| Lys | Leu | Gly | Thr 340 | Gly | Val | Ser | Phe | Asp 345 | Ser | Thr | Gly | Ala | Leu | Ser | Val 350 |
| Gly | Asn | Thr 355 | Gly | Asp | Asp | Lys | Leu | Thr 360 | Leu | Trp | Thr | Thr 365 | Pro | Asp | Pro 370 |
| Ser | Pro 370 | Asn | Cys | Arg | Ile | His 375 | Ser | Asp | Lys | Asp | Cys 380 | Lys | Phe | Thr | Leu 385 |
| Val 385 | Leu | Thr | Lys | Cys | Gly 390 | Ser | Gln | Ile | Leu | Ala 395 | Ser | Val | Ala | Ala | Leu 400 |
| Ala | Val | Ser | Gly | Asn 405 | Leu | Ala | Ser | Ile | Thr 410 | Gly | Thr | Val | Ser | Ser | Val 415 |
| Thr | Ile | Phe | Leu 420 | Arg | Phe | Asp | Gln | Asn 425 | Gly | Val | Leu | Met | Glu | Asn | Ser 430 |
| Ser | Leu | Asp 435 | Lys | Gln | Tyr | Trp | Asn 440 | Phe | Arg | Asn | Gly | Asn 445 | Ser | Thr | Asn 450 |
| Ala | Thr 450 | Pro | Tyr | Thr | Asn | Ala 455 | Val | Gly | Phe | Met | Pro 460 | Asn | Leu | Ala | Ala 465 |
| Tyr 465 | Pro | Lys | Thr | Gln | Ser 470 | Gln | Thr | Ala | Lys | Asn 475 | Asn | Ile | Val | Ser | Gln 480 |
| Val | Tyr | Leu | Asn | Gly 485 | Asp | Lys | Ser | Lys | Pro 490 | Met | Thr | Leu | Thr | Ile | Thr 495 |
| Leu | Asn | Gly | Thr 500 | Asn | Glu | Ser | Ser | Glu 505 | Thr | Ser | Gln | Val | Ser | His | Tyr 510 |
| Ser | Met | Ser 515 | Phe | Thr | Trp | Ala | Trp 520 | Glu | Ser | Gly | Gln | Tyr 525 | Ala | Thr | Glu 530 |
| Thr | Phe 530 | Ala | Thr | Asn | Ser | Phe 535 | Thr | Phe | Ser | Tyr | Ile 540 | Ala | Glu | Gln | |

<210> 58

<211> 963

<212> DNA

<213> Chimapnzee Adenovirus- ChAd 8 Fiber

<400> 58

| | | | | | | |
|-------------|------------|-------------|-------------|-------------|------------|-----|
| atgaccaaac | gagttcgact | aagcagctcc | ttcaatccgg | tctacccta | tgaagatgaa | 60 |
| agcagctccc | aacacccctt | tataaaccct | ggtttcattt | cctcaaattg | atttacacaa | 120 |
| agcccagatg | gggttcttac | acttaaattg | ttatcgccgc | tcaccaccac | aggcggctcc | 180 |
| cttcaactta | aagttggagg | aggattatca | gtggatgaca | ctgacgggtt | attagaagaa | 240 |
| aacataagca | ttacagcacc | acttaataaa | acaagtcact | caatagggtt | atccatagga | 300 |
| gatgggttgg | aaacaaaaaa | caaccaacta | tgtgctaagc | tgggagacgg | tcttacattt | 360 |
| aatacaggca | gcatatgcat | agatactgac | attaatacat | tatggacagg | agcaacacca | 420 |
| gacgctaatt | gcttagtctt | tggaaactgaa | tctaattgatt | gtaaacttac | actggcactt | 480 |
| gtaaagtctag | gagccttagt | aaatgcttac | gtagcacttg | ttggagcctt | agacgccgtt | 540 |
| aatgatttaa | ccacagaaa | aagtgcctcaa | ataattgcag | acataatttt | tgatgcgcaa | 600 |
| ggaaaaacttc | ttcttgattt | atcagcactc | aaaacagagc | taaaacacaa | atctggcaca | 660 |
| ggcacttcga | caqcagatcc | caataactgt | aaaagcttta | tgccaaagtct | aaatgcatat | 720 |

```

ccactgcgcc ccaatggagg caacggaaac tatatttatg gaaccaccta ctacagggcc 780
agagatgaaa cccttttatga acttaaaacc tctgtaatgc ttaactacaa aattaccagt 840
ggactatgtg catatgccat gcattttcag tggctcttga atagtgggac taaaccagaa 900
gacactcccg ccactttcat tgcctccccc tttgtctttt cctacattag agaagatgac 960
tga 963

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<210> 59

<211> 320

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 8 Fiber

<400> 59

```

Met Thr Lys Arg Val Arg Leu Ser Ser Ser Phe Asn Pro Val Tyr Pro
 1          5          10          15
Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
          20          25          30
Ile Ser Ser Asn Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu
          35          40          45
Lys Cys Leu Ser Pro Leu Thr Thr Gly Gly Ser Leu Gln Leu Lys
          50          55          60
Val Gly Gly Gly Leu Ser Val Asp Asp Thr Asp Gly Ser Leu Glu Glu
65          70          75          80
Asn Ile Ser Ile Thr Ala Pro Leu Asn Lys Thr Ser His Ser Ile Gly
          85          90          95
Leu Ser Ile Gly Asp Gly Leu Glu Thr Lys Asn Asn Gln Leu Cys Ala
          100          105          110
Lys Leu Gly Asp Gly Leu Thr Phe Asn Thr Gly Ser Ile Cys Ile Asp
          115          120          125
Thr Asp Ile Asn Thr Leu Trp Thr Gly Ala Thr Pro Asp Ala Asn Cys
          130          135          140
Leu Val Leu Gly Thr Glu Ser Asn Asp Cys Lys Leu Thr Leu Ala Leu
145          150          155          160
Val Lys Ser Gly Ala Leu Val Asn Ala Tyr Val Ala Leu Val Gly Ala
          165          170          175
Ser Asp Ala Val Asn Asp Leu Thr Thr Glu Thr Ser Ala Gln Ile Ile
          180          185          190
Ala Asp Ile Tyr Phe Asp Ala Gln Gly Lys Leu Leu Pro Asp Leu Ser
          195          200          205
Ala Leu Lys Thr Glu Leu Lys His Lys Ser Gly Gln Gly Thr Ser Thr
          210          215          220
Ala Asp Pro Asn Asn Cys Lys Ser Phe Met Pro Ser Leu Asn Ala Tyr
225          230          235          240
Pro Leu Arg Pro Asn Gly Gly Asn Gly Asn Tyr Ile Tyr Gly Thr Thr
          245          250          255
Tyr Tyr Arg Ala Arg Asp Glu Thr Leu Tyr Glu Leu Lys Thr Ser Val
          260          265          270
Met Leu Asn Tyr Lys Ile Thr Ser Gly Leu Cys Ala Tyr Ala Met His
          275          280          285
Phe Gln Trp Ser Trp Asn Ser Gly Thr Lys Pro Glu Asp Thr Pro Ala
          290          295          300
Thr Phe Ile Ala Ser Pro Phe Val Phe Ser Tyr Ile Arg Glu Asp Asp
305          310          315          320

```

<210> 60

<211> 1062

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 22 Fiber

<400> 60

```

atggccaaac gagctcggct aagcagctcc ttcaatccgg tctacccta tgaagatgaa 60
agcagctcac aacaccctt tataaacctt ggtttcattt cctcaaattg ttttgcacaa 120

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agccagatg gagttctaac tcttaaagt gttaatccgc tcactaccgc cagcggaccc 180
ctccaactta aagttggaag cagtccttaca gtagataata tcgatgggtc tttggaggaa 240
aatataactg ccgcagcgcc actcactaaa actaaccact ccatagggtt atcaatagga 300
tctggcttgc aaacaaagga tgataaactt tgtttatcgc tgggagatgg gttggttaaca 360
aaggatgata aactatgttt atcgctggga gatgggttaa taacaaaaga tgatacacta 420
tgtgccaaac taggacatgg ccttgtgttt gactcttcca atgctatcac catagaaaac 480
aacaccttgt ggacaggtgc aaaaccaagc gccaaactgtg taattaaaga gggagaagat 540
tccccagact gtaagctcac tttagtctta gtgaagaatg gaggactgat aaatggatac 600
ataacattaa tgggagcctc agaataact aacaccttgt ttaaaaaaca acaagttaca 660
atcgatgtaa acctcgcat tgaataact ggccaaatta tcacttacct atcatccctt 720
aaaagtaacc tgaactttta agacaaccaa aacatggcta ctggaacccat aaccagtgcc 780
aaaggcttca tgcccagcac caccgcctat ccatttataa catacgccac tcagtcctta 840
aatgaagatt acatttatgg agagtgttac taaaaatcta ccaatggaac tctctttcca 900
ctaaaagtta ctgtcacact aaacagacgt atgtcagctt ctggaatggc ctatgctatg 960
aatttttcat ggtctctaaa tgcagaggaa gccccgaaa ctaccgaagt cactctcatt 1020
acctccccct tctttttttc ttatatcaga gaagatgact ga 1062

```

<210> 61

<211> 353

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 22 Fiber

<400> 61

```

Met Ala Lys Arg Ala Arg Leu Ser Ser Ser Phe Asn Pro Val Tyr Pro
 1          5          10          15
Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
          20          25          30
Ile Ser Ser Asn Gly Phe Ala Gln Ser Pro Asp Gly Val Leu Thr Leu
 35          40          45
Lys Cys Val Asn Pro Leu Thr Thr Ala Ser Gly Pro Leu Gln Leu Lys
 50          55          60
Val Gly Ser Ser Leu Thr Val Asp Asn Ile Asp Gly Ser Leu Glu Glu
 65          70          75          80
Asn Ile Thr Ala Ala Ala Pro Leu Thr Lys Thr Asn His Ser Ile Gly
          85          90          95
Leu Ser Ile Gly Ser Gly Leu Gln Thr Lys Asp Asp Lys Leu Cys Leu
 100          105          110
Ser Leu Gly Asp Gly Leu Val Thr Lys Asp Asp Lys Leu Cys Leu Ser
 115          120          125
Leu Gly Asp Gly Leu Ile Thr Lys Asp Asp Thr Leu Cys Ala Lys Leu
 130          135          140
Gly His Gly Leu Val Phe Asp Ser Ser Asn Ala Ile Thr Ile Glu Asn
 145          150          155          160
Asn Thr Leu Trp Thr Gly Ala Lys Pro Ser Ala Asn Cys Val Ile Lys
          165          170          175
Glu Gly Glu Asp Ser Pro Asp Cys Lys Leu Thr Leu Val Leu Val Lys
          180          185          190
Asn Gly Gly Leu Ile Asn Gly Tyr Ile Thr Leu Met Gly Ala Ser Glu
 195          200          205
Tyr Thr Asn Thr Leu Phe Lys Asn Lys Gln Val Thr Ile Asp Val Asn
 210          215          220
Leu Ala Phe Asp Asn Thr Gly Gln Ile Ile Thr Tyr Leu Ser Ser Leu
 225          230          235          240
Lys Ser Asn Leu Asn Phe Lys Asp Asn Gln Asn Met Ala Thr Gly Thr
          245          250          255
Ile Thr Ser Ala Lys Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe
          260          265          270
Ile Thr Tyr Ala Thr Gln Ser Leu Asn Glu Asp Tyr Ile Tyr Gly Glu
 275          280          285
Cys Tyr Tyr Lys Ser Thr Asn Gly Thr Leu Phe Pro Leu Lys Val Thr
 290          295          300

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Val Thr Leu Asn Arg Arg Met Ser Ala Ser Gly Met Ala Tyr Ala Met
305                      310                      315                      320
Asn Phe Ser Trp Ser Leu Asn Ala Glu Glu Ala Pro Glu Thr Thr Glu
                      325                      330                      335
Val Thr Leu Ile Thr Ser Pro Phe Phe Phe Ser Tyr Ile Arg Glu Asp
                      340                      345                      350
Asp

```

```

<210> 62
<211> 1686
<212> DNA
<213> Chimpanzee Adenovirus- ChAd 24 Fiber

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```

<400> 62
atgtcagatt cttgctcctg tccttccgca cccactatct tcatgttggt gcagatgaag 60
cgcacaaaaa cgtctgacga gagcttcaac cccgtgtacc cctatgacac ggaaaacggt 120
cctccctccg tccctttcct caccctccc ttcgtgtctc ccgatggatt ccaagagagc 180
ccccccgggg tctgtctct gaacctggcc gagcccctgg tcaattccca cggcatgctc 240
gccctgaaaa tgggaagtgg cctctccctg gacgacgcc gcaacctcac ctctcaagat 300
gtcaccacca ctaccctcc cctgaaaaaa accaagacca acctcagcct agaaaacctca 360
gccccctga ctgtgagcac ctcaggcgcc ctcaaccctag cggccgcgcg tccctggcg 420
gtggccggca cctccctcac catgcaatca gaggcccccc tgacagtaca ggatgcaaaa 480
ctcaccctgg ccaccaaggg cccctgacc gtgtctgaag gaaaactggc cttgcagacc 540
tcggccccac tgacggccgc tgacagcagc accctcaccg ttagcgccac accaccatc 600
aatgtaagca gtggaagttt gggcttagac atggaaaatc ccatgtatac tcatgacgga 660
aaactgggaa taagaattgg gggcccactg agagtagtag acagcctgca cacactgact 720
gtagttaccg gaaatggaat agctgtagat aacaatgcc tccaaactag agttacgggc 780
gccctgggtt atgacacatc aggaaacct caactgagag ccgcgggggg tatgcgaatt 840
gatgcaaata gccaaattat ccttgatgtg gcatacccat ttgatgctca aaacaatctc 900
agccttagac ttggtcaggg acccctgtat gtaaacacag accacaacct agatttgaat 960
tgcaacagag gtctgaccac aactaccacc aacaacacaa aaaaacttga aactaaaatt 1020
ggctcaggct tagactatga taccaatggg gctgtcatta taaaacttgg cactgggtgc 1080
agctttgaca gcacaggcgc cctaagtgtg ggaaactctg gcgatgataa actgactctg 1140
tggaacaacc cagaccatc tccaaattgc agaattcact cagacaaaga ctgcaagttt 1200
actctagtoc taactaagtg tggaagtcaa atcctggctt ctgtcgccgc cctagcggtg 1260
tcaggaaatc tggcttcaat aacaggcacc gtttccagcg ttaccatctt tctcagatct 1320
gatcagaatg gagtgcttat ggaaaactcc tcgctagaca agcagtactg gaactttaga 1380
aatggttaatt caaccaatgc caccctctac accaatgcag ttggtttcat gccaaacctc 1440
gcagcatacc ccaagacaca gagtccagct gctaaaaaca acattgtaag tcagggttat 1500
ttgaatgggg acaaatccaa acccatgac cttaccatta ccctcaatgg aactaatgaa 1560
tcagtgaaa ctagccaggt gagtccactac tccatgtcat ttacgtgggc ttgggagagt 1620
gggcaatatg ccaccgaaac ctttgccacc aattccttta ctttctctta cattgctgaa 1680
caataa
1686

```

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<210> 63
<211> 543
<212> PRT
<213> Chimpanzee Adenovirus- ChAd 24 Fiber

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```

<400> 63
Met Lys Arg Thr Lys Thr Ser Asp Glu Ser Phe Asn Pro Val Tyr Pro
1      5      10      15
Tyr Asp Thr Glu Asn Gly Pro Pro Ser Val Pro Phe Leu Thr Pro Pro
20     25     30
Phe Val Ser Pro Asp Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35     40     45
Leu Asn Leu Ala Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
50     55     60
Lys Met Gly Ser Gly Leu Ser Leu Asp Asp Ala Gly Asn Leu Thr Ser
65     70     75     80

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gln | Asp | Val | Thr | Thr | Thr | Thr | Pro | Pro | Leu | Lys | Lys | Thr | Lys | Thr | Asn | |
| | | | 85 | | | | | | 90 | | | | | 95 | | |
| Leu | Ser | Leu | Glu | Thr | Ser | Ala | Pro | Leu | Thr | Val | Ser | Thr | Ser | Gly | Ala | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Leu | Thr | Leu | Ala | Ala | Ala | Ala | Pro | Leu | Ala | Val | Ala | Gly | Thr | Ser | Leu | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| Thr | Met | Gln | Ser | Glu | Ala | Pro | Leu | Thr | Val | Gln | Asp | Ala | Lys | Leu | Thr | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Leu | Ala | Thr | Lys | Gly | Pro | Leu | Thr | Val | Ser | Glu | Gly | Lys | Leu | Ala | Leu | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Gln | Thr | Ser | Ala | Pro | Leu | Thr | Ala | Ala | Asp | Ser | Ser | Thr | Leu | Thr | Val | |
| | | | 165 | | | | | | 170 | | | | | 175 | | |
| Ser | Ala | Thr | Pro | Pro | Ile | Asn | Val | Ser | Ser | Gly | Ser | Leu | Gly | Leu | Asp | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Met | Glu | Asn | Pro | Met | Tyr | Thr | His | Asp | Gly | Lys | Leu | Gly | Ile | Arg | Ile | |
| | 195 | | | | | | 200 | | | | | 205 | | | | |
| Gly | Gly | Pro | Leu | Arg | Val | Val | Asp | Ser | Leu | His | Thr | Leu | Thr | Val | Val | |
| | 210 | | | | | 215 | | | | | | 220 | | | | |
| Thr | Gly | Asn | Gly | Ile | Ala | Val | Asp | Asn | Asn | Ala | Leu | Gln | Thr | Arg | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| Thr | Gly | Ala | Leu | Gly | Tyr | Asp | Thr | Ser | Gly | Asn | Leu | Gln | Leu | Arg | Ala | |
| | | | 245 | | | | | | 250 | | | | | 255 | | |
| Ala | Gly | Gly | Met | Arg | Ile | Asp | Ala | Asn | Gly | Gln | Leu | Ile | Leu | Asp | Val | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| Ala | Tyr | Pro | Phe | Asp | Ala | Gln | Asn | Asn | Leu | Ser | Leu | Arg | Leu | Gly | Gln | |
| | 275 | | | | | | 280 | | | | | 285 | | | | |
| Gly | Pro | Leu | Tyr | Val | Asn | Thr | Asp | His | Asn | Leu | Asp | Leu | Asn | Cys | Asn | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| Arg | Gly | Leu | Thr | Thr | Thr | Thr | Asn | Asn | Thr | Lys | Lys | Leu | Glu | Thr | | |
| 305 | | | | | 310 | | | | 315 | | | | | 320 | | |
| Lys | Ile | Gly | Ser | Gly | Leu | Asp | Tyr | Asp | Thr | Asn | Gly | Ala | Val | Ile | Ile | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| Lys | Leu | Gly | Thr | Gly | Val | Ser | Phe | Asp | Ser | Thr | Gly | Ala | Leu | Ser | Val | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| Gly | Asn | Thr | Gly | Asp | Asp | Lys | Leu | Thr | Leu | Trp | Thr | Thr | Pro | Asp | Pro | |
| | 355 | | | | | 360 | | | | | | 365 | | | | |
| Ser | Pro | Asn | Cys | Arg | Ile | His | Ser | Asp | Lys | Asp | Cys | Lys | Phe | Thr | Leu | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| Val | Leu | Thr | Lys | Cys | Gly | Ser | Gln | Ile | Leu | Ala | Ser | Val | Ala | Ala | Leu | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| Ala | Val | Ser | Gly | Asn | Leu | Ala | Ser | Ile | Thr | Gly | Thr | Val | Ser | Ser | Val | |
| | | | 405 | | | | | | 410 | | | | | 415 | | |
| Thr | Ile | Phe | Leu | Arg | Phe | Asp | Gln | Asn | Gly | Val | Leu | Met | Glu | Asn | Ser | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| Ser | Leu | Asp | Lys | Gln | Tyr | Trp | Asn | Phe | Arg | Asn | Gly | Asn | Ser | Thr | Asn | |
| | 435 | | | | | | 440 | | | | | 445 | | | | |
| Ala | Thr | Pro | Tyr | Thr | Asn | Ala | Val | Gly | Phe | Met | Pro | Asn | Leu | Ala | Ala | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| Tyr | Pro | Lys | Thr | Gln | Ser | Gln | Thr | Ala | Lys | Asn | Asn | Ile | Val | Ser | Gln | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Val | Tyr | Leu | Asn | Gly | Asp | Lys | Ser | Lys | Pro | Met | Ile | Leu | Thr | Ile | Thr | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |
| Leu | Asn | Gly | Thr | Asn | Glu | Ser | Ser | Glu | Thr | Ser | Gln | Val | Ser | His | Tyr | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| Ser | Met | Ser | Phe | Thr | Trp | Ala | Trp | Glu | Ser | Gly | Gln | Tyr | Ala | Thr | Glu | |
| | 515 | | | | | | 520 | | | | | 525 | | | | |
| Thr | Phe | Ala | Thr | Asn | Ser | Phe | Thr | Phe | Ser | Tyr | Ile | Ala | Glu | Gln | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |

<210> 64

<211> 1335

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 26 Fiber

<400> 64

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atgtccaaaa agcgcgtccg ggtggatgat gacttcgacc ccgtctaccc ctacgatgca 60
gacaacgcac cgaccgtgcc cttcatcaac ccccccttcg tctcttcaga tggattccaa 120
gagaagcccc tgggggtgct gtccctgcgt ctggccgatc ccgtcaccac caagaacggg 180
gaaatcaccc tcaagctggg agatgggggtg gacctcgacg actcgggaaa actcatctcc 240
aacacggcca ccaaggccgc cgccccctctc agttttttcca acaacaccat ttcccttaac 300
atggataccc ctcttttaca caacaatgga aagctaggta tgaaggtaac cgcaccatta 360
aagatattag acacagatct actaaaaaca cttgttggtg cttatgggca gggattagga 420
acaaacacca atgggtgctct tgttgcccaa ctagcatacc cacttgtttt taataccgct 480
agcaaaattg cccttaattt aggcaatgga ccattaaaag tggatgcaaa tagactgaac 540
attaattgca aaagaggat ctatgtcact accacaaaag atgcactgga gattaatatc 600
agttgggcaa atgctatgac atttatagga aatgccattg gtgtcaatat tgacacaaaa 660
aaaggcctac agttcggcac ttcaagcact gaaacagatg ttaaaaatgc ttttccactc 720
caagtaaaac ttggagctgg tttacattt gacagcacag gtgccattgt tgcttggaac 780
aaagaagatg acaaacttac actgtggacc acagccgatc catctccaaa ctgtcacata 840
tattctgcaa aggatgctaa gcttacactc tgcttgacaa agtgtggtag tcaaactcta 900
ggcactgtct ccctattagc agtcagtggc agcttggttc ctatcacagg ggctgttaga 960
actgcacttg tatcactcaa attcaatgct aatggagccc ttttgacaaa atcaactctg 1020
aacaagaat actggaacta cagacaagga gatctaattc caggtacacc atatacatat 1080
gctgtgggtt tcatgacctaa caaaaaagcc taccctaaaa acacaactgc agcttccaag 1140
agccacattg tgggtgatgt gtatttagat ggagatgcag ataaaccttt atctcttattc 1200
atcactttca atgaaactga tgatgaaacc tgtgattact gcatcaactt tcaatggaaa 1260
tggggagctg atcaatataa ggataagaca ctcgcaacca gttcattcac cttctcatatc 1320
atcgcccaag aataa                                     1335

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<210> 65

<211> 444

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 26 Fiber

<400> 65

```

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1          5          10          15
Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20          25          30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35          40          45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50          55          60
Lys Leu Gly Asp Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
 65          70          75          80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85          90          95
Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Asn Asn Asn Gly Lys Leu
 100         105         110
Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
 115         120         125
Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Asn
 130         135         140
Gly Ala Leu Val Ala Gln Leu Ala Tyr Pro Leu Val Phe Asn Thr Ala
 145         150         155         160
Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
 165         170         175
Asn Arg Leu Asn Ile Asn Cys Lys Arg Gly Ile Tyr Val Thr Thr Thr
 180         185         190
Lys Asp Ala Leu Glu Ile Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
 195         200         205

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```

Ile Gly Asn Ala Ile Gly Val Asn Ile Asp Thr Lys Lys Gly Leu Gln
 210          215          220
Phe Gly Thr Ser Ser Thr Glu Thr Asp Val Lys Asn Ala Phe Pro Leu
225          230          235          240
Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
          245          250          255
Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
          260          265          270
Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys Asp Ala Lys Leu
          275          280          285
Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
          290          295          300
Leu Leu Ala Val Ser Gly Ser Leu Ala Pro Ile Thr Gly Ala Val Arg
305          310          315          320
Thr Ala Leu Val Ser Leu Lys Phe Asn Ala Asn Gly Ala Leu Leu Asp
          325          330          335
Lys Ser Thr Leu Asn Lys Glu Tyr Trp Asn Tyr Arg Gln Gly Asp Leu
          340          345          350
Ile Pro Gly Thr Pro Tyr Thr His Ala Val Gly Phe Met Pro Asn Lys
          355          360          365
Lys Ala Tyr Pro Lys Asn Thr Thr Ala Ala Ser Lys Ser His Ile Val
          370          375          380
Gly Asp Val Tyr Leu Asp Gly Asp Ala Asp Lys Pro Leu Ser Leu Ile
385          390          395          400
Ile Thr Phe Asn Glu Thr Asp Asp Glu Thr Cys Asp Tyr Cys Ile Asn
          405          410          415
Phe Gln Trp Lys Trp Gly Ala Asp Gln Tyr Lys Asp Lys Thr Leu Ala
          420          425          430
Thr Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
          435          440

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<210> 66
<211> 1062
<212> DNA
<213> Chimpanzee Adenovirus- ChAd 30 Fiber

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```

<400> 66
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agcagctcac aacaccctt tataaacctt ggtttcattt cctcaaattg ttttgcacaa 120
agccagatg gagttctaac tcttaaattg gttaatccgc tcactaccgc cagcggaccc 180
ctccaactta aagttggaag cagtcttaca gtatatacta tcgatgggtc tttggaggaa 240
aatataactg ccgcagcgcc actcactaaa actaaccact ccatagggtt atcaatagga 300
tctggcttgc aaacaaagga tgataaaact tgtttatcgc tgggagatgg gttggtaaca 360
aaggatgata aactatgttt atcgctggga gatgggttaa taacaaaaga tgatacacta 420
tgtgccaaac taggacatgg ccttgtgttt gactcttcca atgctatcac catagaaaac 480
aacaccttgt ggacaggtgc aaaaccaagc gccaaactgt taattaaaga gggagaagat 540
tccccagact gtaagctcac tttagttcta gtgaagaatg gaggactgat aaatggatac 600
ataacattaa tgggagcctc agaataact aacaccttgt ttaaaaacaa acaagttaca 660
atcgatgtaa acctcgcat tggataatac ggccaaatta tcacttacct atcatccctt 720
aaaagtaacc tgaactttta agacaaccaa aacatggcta ctggaaccat aaccagtgcc 780
aaaggcttca tgcccagcac caccgcctat ccatttataa catacgccac tcagtcccta 840
aatgaagatt acatttatgg agagtgttac tacaaatcta ccaatggaac tctctttcca 900
ctaaaagtta ctgtcacact aaacagacgt atgtcagctt ctggaatggc ctatgctatg 960
aatttttcat ggtctctaaa tgcagaggaa gccccgaaa ctaccgaagt cactctcatt 1020
acctccccct tctttttttc ttatatcaga gaagatgact ga 1062

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<210> 67
<211> 353
<212> PRT
<213> Chimpanzee Adenovirus- ChAd 30 Fiber

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<400> 67

```

Met Ala Lys Arg Ala Arg Leu Ser Ser Ser Phe Asn Pro Val Tyr Pro
 1          5          10          15
Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
          20          25          30
Ile Ser Ser Asn Gly Phe Ala Gln Ser Pro Asp Gly Val Leu Thr Leu
          35          40          45
Lys Cys Val Asn Pro Leu Thr Thr Ala Ser Gly Pro Leu Gln Leu Lys
          50          55          60
Val Gly Ser Ser Leu Thr Val Asp Thr Ile Asp Gly Ser Leu Glu Glu
65          70          75          80
Asn Ile Thr Ala Ala Pro Leu Thr Lys Thr Asn His Ser Ile Gly
          85          90          95
Leu Ser Ile Gly Ser Gly Leu Gln Thr Lys Asp Asp Lys Leu Cys Leu
          100          105          110
Ser Leu Gly Asp Gly Leu Val Thr Lys Asp Asp Lys Leu Cys Leu Ser
          115          120          125
Leu Gly Asp Gly Leu Ile Thr Lys Asp Asp Thr Leu Cys Ala Lys Leu
          130          135          140
Gly His Gly Leu Val Phe Asp Ser Ser Asn Ala Ile Thr Ile Glu Asn
145          150          155          160
Asn Thr Leu Trp Thr Gly Ala Lys Pro Ser Ala Asn Cys Val Ile Lys
          165          170          175
Glu Gly Glu Asp Ser Pro Asp Cys Lys Leu Thr Leu Val Leu Val Lys
          180          185          190
Asn Gly Gly Leu Ile Asn Gly Tyr Ile Thr Leu Met Gly Ala Ser Glu
          195          200          205
Tyr Thr Asn Thr Leu Phe Lys Asn Lys Gln Val Thr Ile Asp Val Asn
          210          215          220
Leu Ala Phe Asp Asn Thr Gly Gln Ile Ile Thr Tyr Leu Ser Ser Leu
225          230          235          240
Lys Ser Asn Leu Asn Phe Lys Asp Asn Gln Asn Met Ala Thr Gly Thr
          245          250          255
Ile Thr Ser Ala Lys Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe
          260          265          270
Ile Thr Tyr Ala Thr Gln Ser Leu Asn Glu Asp Tyr Ile Tyr Gly Glu
          275          280          285
Cys Tyr Tyr Lys Ser Thr Asn Gly Thr Leu Phe Pro Leu Lys Val Thr
          290          295          300
Val Thr Leu Asn Arg Arg Met Ser Ala Ser Gly Met Ala Tyr Ala Met
305          310          315          320
Asn Phe Ser Trp Ser Leu Asn Ala Glu Glu Ala Pro Glu Thr Thr Glu
          325          330          335
Val Thr Leu Ile Thr Ser Pro Phe Phe Phe Ser Tyr Ile Arg Glu Asp
          340          345          350
Asp

```

<210> 68

<211> 1791

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 31 Fiber

<400> 68

```

atgtcagatt cttgctcctg tccctccgca cccactatct tcatgttggt gcagatgaag 60
cgcacaaaaa cgtctgacga gagcttcaac cccgtgtacc cctatgacac ggaaagcggc 120
cctccctccg tccctttcct caccctccc ttgctgtctc ccgatggatt ccaagaaagt 180
ccccccgggg tcctgtctct gaacctggcc gagcccctgg tcacttccca cggcatgctc 240
gccctgaaaa tgggaagtgg cctctccctg gacgacgctg gcaacctcac ctctcaagat 300
atcaccaccg ctagccctcc cctcaaaaaa accaagacca acctcagcct agaaacctca 360
tccccccctaa ctgtgagcac ctcaggcgcc ctcaccgtag cagccgcgcg tcccctggcg 420

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gtggccggca cctccctcac catgcaatca gagggccccc tgacagtaca ggatgcaaaa 480
ctcaccctgg ccaccaaagg ccccttgacc gtgtctgaag gcaaactggc cttgcaaaaca 540
tcggcccccgc tgacggccgc tgacagcagc accctcacag tcagtgccac accaccctt 600
agcacaagca atggcagctt ggggtattgac atgcaagccc ccattttacac caccaatgga 660
aaactaggac ttaacttttg cgctcccctg catgtggtag acagcctaaa tgcaactgact 720
gtagtacttg gccaaagtct tacgataaac ggaacagccc taaaaactag agtctcaggt 780
gccctcaact atgacacatc aggaaaccta gaattgagag ctgcaggggg tatgcgagtt 840
gatgcaaatg gtcaacttat ccttgatgta gcttaccat ttgatgcaca aaacaatctc 900
agccttaggc ttggacaggg acccctgttt gttaactctg cccacaactt ggatgttaac 960
tacaacagag gcctctacct gttcacatct ggaaatacca aaaagctaga agttaatatc 1020
aaaacagcca aggtctcat ttatgatgac actgctatag caatcaatgc gggatgatgg 1080
ctacagtttg actcaggctc agatacaaat ccattaaaaa ctaaacttgg attaggactg 1140
gattatgact ccagcagagc cataattgct aaactgggaa ctggcctaag ctttgacaac 1200
acaggtgcca tcacagtagg caacaaaaat gatgacaagc ttaccttgtg gaccacacca 1260
gacccatccc ctaactgtag aatctattca gagaaagatg ctaaattcac acttgttttg 1320
actaaatgcg gcagtcaggt gttggccagc gtttctgttt tatctgtaaa aggtagcctt 1380
gcgcccatac gtggcacagt aactagtgtc cagattgtcc tcagatttga tgaaaatgga 1440
gttctactaa gcaattcttc ccttgaccct caatactgga actacagaaa aggtgacctt 1500
acagaggggca ctgcatatac caacgcagtg ggatttatgc ccaacctcac agcataccca 1560
aaaacacaga gccaaactgc taaaagcaac attgtaagtc aggtttactt gaatggggac 1620
aaatccaaac ccatgaccct caccattacc ctcaatggaa ctaatgaaac aggagatgcc 1680
acagtaagca cttactccat gtcattctca tggaactgga atggaagtaa ttacattaat 1740
gaaacgttcc aaaccaactc cttcaccttc tcctacatcg cccaagaata a 1791

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<210> 69

<211> 578

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 31 Fiber

<400> 69

```

Met Lys Arg Thr Lys Thr Ser Asp Glu Ser Phe Asn Pro Val Tyr Pro
1          5          10          15
Tyr Asp Thr Glu Ser Gly Pro Pro Ser Val Pro Phe Leu Thr Pro Pro
20          25          30
Phe Val Ser Pro Asp Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35          40          45
Leu Asn Leu Ala Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
50          55          60
Lys Met Gly Ser Gly Leu Ser Leu Asp Asp Ala Gly Asn Leu Thr Ser
65          70          75          80
Gln Asp Ile Thr Thr Ala Ser Pro Pro Leu Lys Lys Thr Lys Thr Asn
85          90          95
Leu Ser Leu Glu Thr Ser Ser Pro Leu Thr Val Ser Thr Ser Gly Ala
100         105         110
Leu Thr Val Ala Ala Ala Ala Pro Leu Ala Val Ala Gly Thr Ser Leu
115         120         125
Thr Met Gln Ser Glu Ala Pro Leu Thr Val Gln Asp Ala Lys Leu Thr
130         135         140
Leu Ala Thr Lys Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu
145         150         155         160
Gln Thr Ser Ala Pro Leu Thr Ala Ala Asp Ser Ser Thr Leu Thr Val
165         170         175
Ser Ala Thr Pro Pro Leu Ser Thr Ser Asn Gly Ser Leu Gly Ile Asp
180         185         190
Met Gln Ala Pro Ile Tyr Thr Thr Asn Gly Lys Leu Gly Leu Asn Phe
195         200         205
Gly Ala Pro Leu His Val Val Asp Ser Leu Asn Ala Leu Thr Val Val
210         215         220
Thr Gly Gln Gly Leu Thr Ile Asn Gly Thr Ala Leu Gln Thr Arg Val
225         230         235         240

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Ser Gly Ala Leu Asn Tyr Asp Thr Ser Gly Asn Leu Glu Leu Arg Ala
 245 250 255
 Ala Gly Gly Met Arg Val Asp Ala Asn Gly Gln Leu Ile Leu Asp Val
 260 265 270
 Ala Tyr Pro Phe Asp Ala Gln Asn Asn Leu Ser Leu Arg Leu Gly Gln
 275 280 285
 Gly Pro Leu Phe Val Asn Ser Ala His Asn Leu Asp Val Asn Tyr Asn
 290 295 300
 Arg Gly Leu Tyr Leu Phe Thr Ser Gly Asn Thr Lys Lys Leu Glu Val
 305 310 315 320
 Asn Ile Lys Thr Ala Lys Gly Leu Ile Tyr Asp Asp Thr Ala Ile Ala
 325 330 335
 Ile Asn Ala Gly Asp Gly Leu Gln Phe Asp Ser Gly Ser Asp Thr Asn
 340 345 350
 Pro Leu Lys Thr Lys Leu Gly Leu Gly Leu Asp Tyr Asp Ser Ser Arg
 355 360 365
 Ala Ile Ile Ala Lys Leu Gly Thr Gly Leu Ser Phe Asp Asn Thr Gly
 370 375 380
 Ala Ile Thr Val Gly Asn Lys Asn Asp Asp Lys Leu Thr Leu Trp Thr
 385 390 395 400
 Thr Pro Asp Pro Ser Pro Asn Cys Arg Ile Tyr Ser Glu Lys Asp Ala
 405 410 415
 Lys Phe Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Val Leu Ala Ser
 420 425 430
 Val Ser Val Leu Ser Val Lys Gly Ser Leu Ala Pro Ile Ser Gly Thr
 435 440 445
 Val Thr Ser Ala Gln Ile Val Leu Arg Phe Asp Glu Asn Gly Val Leu
 450 455 460
 Leu Ser Asn Ser Ser Leu Asp Pro Gln Tyr Trp Asn Tyr Arg Lys Gly
 465 470 475 480
 Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly Phe Met Pro
 485 490 495
 Asn Leu Thr Ala Tyr Pro Lys Thr Gln Ser Gln Thr Ala Lys Ser Asn
 500 505 510
 Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Met Thr
 515 520 525
 Leu Thr Ile Thr Leu Asn Gly Thr Asn Glu Thr Gly Asp Ala Thr Val
 530 535 540
 Ser Thr Tyr Ser Met Ser Phe Ser Trp Asn Trp Asn Gly Ser Asn Tyr
 545 550 555 560
 Ile Asn Glu Thr Phe Gln Thr Asn Ser Phe Thr Phe Ser Tyr Ile Ala
 565 570 575
 Gln Glu

<210> 70

<211> 978

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 37 Fiber

<400> 70

atggccaaac gggctcgtct aagcagctcc ttcaaccggg tgtacccta tgaagacgag 60
 agcagctcac aacacccatt tataaacccc ggcttcattt cccctgatgg ctttacacaa 120
 agcccagacg gagttctaac actgaaatgt gtttcccctc ttactaccac cagtggcgct 180
 ctagacatta aagtgggaag agggcttaaa gtagatagca ctgatgggtc cctggaagaa 240
 aatatagaca ttacagctcc cctcactaaa tttaaccact cagtaggatt agcatttggc 300
 gacggtctag aaacaaaaga aaacaagctt tatgtaaaac ttggagatgg acttaaat 360
 agctctggga gtatatacat tgaccatgat gttaacactt tatggacagg agtcaatcca 420
 agtgctaact gtataattac agacaatgga gaaaccaatg acagcaagct taccctaata 480
 cttgttaagt caggtggatt aataaatgct tatgtctcat taatgggtga ctcagacaca 540
 gtcaataaat taaccacaga aaaaagtgct caaattaccg ttgacatata ctttgataat 600


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caaggaaaag ttcttactga actatcggcc cttaaaacag atcttaaaca taaatttggt 660
caaaacatgg cttctagcga agtatcaaac tgcaaaggct ttatgccaag cttaaatgca 720
taccattca gaaatccaac taaacctacc aaaggaagag aagactacat ttatggaata 780
acttactatc aagccacaga tggtaatctc tatgagctaa aaactactat tactctaaac 840
cacagtgtca ttagttctct atgtgcatat gcaatgcaca tttcatgggc atgggacacc 900
gtaacagagc cagagacaac acccactact cttattacct ccccttctc cttttcctat 960
atcagagaag atgactga                                     978

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<210> 71

<211> 325

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 37 Fiber

<400> 71

```

Met Ala Lys Arg Ala Arg Leu Ser Ser Ser Phe Asn Pro Val Tyr Pro
 1          5          10          15
Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
          20          25          30
Ile Ser Pro Asp Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu
          35          40          45
Lys Cys Val Ser Pro Leu Thr Thr Ser Gly Ala Leu Asp Ile Lys
          50          55          60
Val Gly Arg Gly Leu Lys Val Asp Ser Thr Asp Gly Ser Leu Glu Glu
65          70          75          80
Asn Ile Asp Ile Thr Ala Pro Leu Thr Lys Phe Asn His Ser Val Gly
          85          90          95
Leu Ala Phe Gly Asp Gly Leu Glu Thr Lys Glu Asn Lys Leu Tyr Val
          100          105          110
Lys Leu Gly Asp Gly Leu Lys Phe Ser Ser Gly Ser Ile Tyr Ile Asp
          115          120          125
His Asp Val Asn Thr Leu Trp Thr Gly Val Asn Pro Ser Ala Asn Cys
          130          135          140
Ile Ile Thr Asp Asn Gly Glu Thr Asn Asp Ser Lys Leu Thr Leu Ile
145          150          155          160
Leu Val Lys Ser Gly Gly Leu Ile Asn Ala Tyr Val Ser Leu Met Gly
          165          170          175
Asp Ser Asp Thr Val Asn Lys Leu Thr Thr Glu Lys Ser Ala Gln Ile
          180          185          190
Thr Val Asp Ile Tyr Phe Asp Asn Gln Gly Lys Val Leu Thr Glu Leu
          195          200          205
Ser Ala Leu Lys Thr Asp Leu Lys His Lys Phe Gly Gln Asn Met Ala
          210          215          220
Ser Ser Glu Val Ser Asn Cys Lys Gly Phe Met Pro Ser Leu Asn Ala
225          230          235          240
Tyr Pro Phe Arg Asn Pro Thr Lys Pro Thr Lys Gly Arg Glu Asp Tyr
          245          250          255
Ile Tyr Gly Ile Thr Tyr Tyr Gln Ala Thr Asp Gly Asn Leu Tyr Glu
          260          265          270
Leu Lys Thr Thr Ile Thr Leu Asn His Ser Val Ile Ser Ser Leu Cys
          275          280          285
Ala Tyr Ala Met His Ile Ser Trp Ser Trp Asp Thr Val Thr Glu Pro
          290          295          300
Glu Thr Thr Pro Thr Thr Leu Ile Thr Ser Pro Phe Ser Phe Ser Tyr
305          310          315          320
Ile Arg Glu Asp Asp
          325

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<210> 72

<211> 1332

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 38 Fiber

<400> 72

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atgtccaaaa agcgcgtccg ggtggatgat gacttcgacc ccgtctaccc ctacgatgca 60
gacaacgcac cgaccgtgcc cttcatcaac ccccccttcg tctcttcaga tggattccaa 120
gagaagcccc tgggggtggt gtccctgcga ctggccgacc ccgtcaccac caagaacggg 180
gaaatcacc ccaagctggg agaggggggtg gacctcgact cctcgggaaa actcatctcc 240
aacacggcca ccaagggcgc cgcccctctc agtttttcca acaacaccat ttcccttaac 300
atggataccc ctttttatac caaagatgga aaattatcct tacaagtttc tccaccatta 360
aacatattaa aatcaacccat tctgaacaca ttagctgtag cttatggatc aggttttagga 420
ctcagtgggtg gcaactgctct tgcagtacag ttggcctctc cactcacctt tgatgaaaaa 480
ggaaatatta aaattaacct agccagtggg ccattaacag ttgatgcaag tcgacttagt 540
atcaactgca aaagaggggt cactgtcact accgcaggag atgcaattaa aagcaacata 600
agctggccta aaggtataag atttgaaggt gatgccatag ctgcaaacad tggcagagga 660
ttggaatttg gaaccactag tacagagact gatgtcacag atgcataccc aattcaagtt 720
aaattgggta ctggtctcac ctttgacagt acaggcgcca ttggtgcatg gaacaaagag 780
gatgataaac ttacattatg gaccacagcc gaccctcgc caaattgcaa aatatactct 840
gaaaaagatg ctaaaactcac actttgcttg acaaaatgtg gaagccaaat tctgggcact 900
gtgactgtat tggcagtga taatggaagt ctcaacccaa tcacaaacac agtaagcact 960
gcacttgtct ccctcaagtt tgatgcaagt ggagttttgc taagcagctc cacattagac 1020
aaagaatatt ggaacttccg aaaggagat gttacacctg ctgaacccta tactaatgct 1080
ataggtttta tgcctaacat aaaggcctat cctaaaaaca catctgcagc ttcaaaaagc 1140
catattgtca gtcaagttta tctcaatggg gatgaaacca aacctctgat gctgattatt 1200
acttttaatg aaactgagga tgcaacttgc acctatagta tcacttttca atggaaatgg 1260
gatagtacta agtacacagg taaaacactt gctaccagct ccttcacctt ctctacatt 1320
gctcaagaat ga 1332

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<210> 73

<211> 443

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 38 Fiber

<400> 73

```

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1          5          10          15
Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20          25          30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35          40          45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50          55          60
Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65          70          75          80
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85          90          95
Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Thr Lys Asp Gly Lys Leu
 100          105          110
Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Lys Ser Thr Ile Leu
 115          120          125
Asn Thr Leu Ala Val Ala Tyr Gly Ser Gly Leu Gly Leu Ser Gly Gly
 130          135          140
Thr Ala Leu Ala Val Gln Leu Ala Ser Pro Leu Thr Phe Asp Glu Lys
 145          150          155          160
Gly Asn Ile Lys Ile Asn Leu Ala Ser Gly Pro Leu Thr Val Asp Ala
 165          170          175
Ser Arg Leu Ser Ile Asn Cys Lys Arg Gly Val Thr Val Thr Thr Ala
 180          185          190
Gly Asp Ala Ile Lys Ser Asn Ile Ser Trp Pro Lys Gly Ile Arg Phe
 195          200          205
Glu Gly Asp Ala Ile Ala Ala Asn Ile Gly Arg Gly Leu Glu Phe Gly
 210          215          220

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Thr Thr Ser Thr Glu Thr Asp Val Thr Asp Ala Tyr Pro Ile Gln Val
225                230                235                240
Lys Leu Gly Thr Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile Val Ala
                245                250                255
Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala Asp Pro
                260                265                270
Ser Pro Asn Cys Lys Ile Tyr Ser Glu Lys Asp Ala Lys Leu Thr Leu
                275                280                285
Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Thr Val Leu
                290                295                300
Ala Val Asn Asn Gly Ser Leu Asn Pro Ile Thr Asn Thr Val Ser Thr
305                310                315                320
Ala Leu Val Ser Leu Lys Phe Asp Ala Ser Gly Val Leu Leu Ser Ser
                325                330                335
Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp Val Thr
                340                345                350
Pro Ala Glu Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn Ile Lys
                355                360                365
Ala Tyr Pro Lys Asn Thr Ser Ala Ala Ser Lys Ser His Ile Val Ser
370                375                380
Gln Val Tyr Leu Asn Gly Asp Glu Thr Lys Pro Leu Met Leu Ile Ile
385                390                395                400
Thr Phe Asn Glu Thr Glu Asp Ala Thr Cys Thr Tyr Ser Ile Thr Phe
                405                410                415
Gln Trp Lys Trp Asp Ser Thr Lys Tyr Thr Gly Lys Thr Leu Ala Thr
                420                425                430
Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
                435                440

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<210> 74

<211> 1332

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 44 Fiber

<400> 74

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atgtccaaaa agcgcgtccg ggtggatgat gacttcgacc ccgtctaccc ctacgatgca 60
gacaacgcac cgaccgtgcc cttcatcaac ccccccttcg tctcttcaga tggattccaa 120
gagaagcccc tgggggtggt gtccctgcga ctggctgacc ccgtcaccac caagaacggg 180
gaaatcaccc tcaagctggg agagggggtg gacctcgact cgtcgggaaa actcatctcc 240
aacacggcca ccaaggccgc cgcccctctc agtatttcaa acaacaccat ttcccttaaa 300
actgctgccc ctttctacaa caacaatgga actttaagcc tcaatgtctc cacaccatta 360
gcagtagttt ccacatttaa cacttttagg ataagtcttg gaaacggtct tcagacttca 420
aataagttgt tgactgtaca actaactcat cctcttacat tcagctcaaa tagcatcaca 480
gtaaaaacag acaaagggtc atatatatac tccagtggaa acagaggact tgaggctaata 540
ataagcctaa aaagaggact agtttttgac ggtaatgcta ttgcaacata tattggaaat 600
ggcttagact atggatctta tgatagtgat ggaaaaacaa gaccgtaata taccaaaatt 660
ggagcaggat taaattttga tgctaacaaa gcaatagctg tcaaactagg cacagggttta 720
agttttgact ccgctggtgc cttgacagct ggaaacaaac aggatgacaa gctaacactt 780
tggactaccc ctgacccaag ccctaattgt caattacttt cagacagaga tgccaaattt 840
actctctgtc ttacaaaatg cggtagtcaa atactaggca ctgtggcagt ggcggctgtt 900
actgtaggat cagactaaa tccaattaat gacacagtca aaagcgccat agttttcctt 960
agatttgatt ccgatggtgt actcatgtca aactcatcaa tggtaggtga ttactggaac 1020
tttagggagg gacagaccac tcaaagtgtg gcctatacaa atgctgtggg attcatgcca 1080
aatataggtg catatccaaa aacccaaagt aaaacaccta aaaatagcat agtcagtcag 1140
gtatatthaa ctggagaaac tactatgcca atgacactaa ccataacttt caatggcact 1200
gatgaaaaag acacaacccc agttagcacc tactctatga cttttacatg gcagtgagact 1260
ggagactata aggacaaaaa tattaccttt gctaccaact cattctcttt ttcctacatc 1320
gcccaggaat aa

```

<210> 75

<211> 443

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 44 Fiber

<400> 75

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Lys | Lys | Arg | Val | Arg | Val | Asp | Asp | Asp | Phe | Asp | Pro | Val | Tyr | 1 | 5 | 10 | 15 |
| Pro | Tyr | Asp | Ala | Asp | Asn | Ala | Pro | Thr | Val | Pro | Phe | Ile | Asn | Pro | Pro | 20 | 25 | 30 | |
| Phe | Val | Ser | Ser | Asp | Gly | Phe | Gln | Glu | Lys | Pro | Leu | Gly | Val | Leu | Ser | 35 | 40 | 45 | |
| Leu | Arg | Leu | Ala | Asp | Pro | Val | Thr | Thr | Lys | Asn | Gly | Glu | Ile | Thr | Leu | 50 | 55 | 60 | |
| Lys | Leu | Gly | Glu | Gly | Val | Asp | Leu | Asp | Ser | Ser | Gly | Lys | Leu | Ile | Ser | 65 | 70 | 75 | 80 |
| Asn | Thr | Ala | Thr | Lys | Ala | Ala | Ala | Pro | Leu | Ser | Ile | Ser | Asn | Asn | Thr | 85 | 90 | 95 | |
| Ile | Ser | Leu | Lys | Thr | Ala | Ala | Pro | Phe | Tyr | Asn | Asn | Asn | Gly | Thr | Leu | 100 | 105 | 110 | |
| Ser | Leu | Asn | Val | Ser | Thr | Pro | Leu | Ala | Val | Phe | Pro | Thr | Phe | Asn | Thr | 115 | 120 | 125 | |
| Leu | Gly | Ile | Ser | Leu | Gly | Asn | Gly | Leu | Gln | Thr | Ser | Asn | Lys | Leu | Leu | 130 | 135 | 140 | |
| Thr | Val | Gln | Leu | Thr | His | Pro | Leu | Thr | Phe | Ser | Ser | Asn | Ser | Ile | Thr | 145 | 150 | 155 | 160 |
| Val | Lys | Thr | Asp | Lys | Gly | Leu | Tyr | Ile | Asn | Ser | Ser | Gly | Asn | Arg | Gly | 165 | 170 | 175 | |
| Leu | Glu | Ala | Asn | Ile | Ser | Leu | Lys | Arg | Gly | Leu | Val | Phe | Asp | Gly | Asn | 180 | 185 | 190 | |
| Ala | Ile | Ala | Thr | Tyr | Ile | Gly | Asn | Gly | Leu | Asp | Tyr | Gly | Ser | Tyr | Asp | 195 | 200 | 205 | |
| Ser | Asp | Gly | Lys | Thr | Arg | Pro | Val | Ile | Thr | Lys | Ile | Gly | Ala | Gly | Leu | 210 | 215 | 220 | |
| Asn | Phe | Asp | Ala | Asn | Lys | Ala | Ile | Ala | Val | Lys | Leu | Gly | Thr | Gly | Leu | 225 | 230 | 235 | 240 |
| Ser | Phe | Asp | Ser | Ala | Gly | Ala | Leu | Thr | Ala | Gly | Asn | Lys | Gln | Asp | Asp | 245 | 250 | 255 | |
| Lys | Leu | Thr | Leu | Trp | Thr | Thr | Pro | Asp | Pro | Ser | Pro | Asn | Cys | Gln | Leu | 260 | 265 | 270 | |
| Leu | Ser | Asp | Arg | Asp | Ala | Lys | Phe | Thr | Leu | Cys | Leu | Thr | Lys | Cys | Gly | 275 | 280 | 285 | |
| Ser | Gln | Ile | Leu | Gly | Thr | Val | Ala | Val | Ala | Ala | Val | Thr | Val | Gly | Ser | 290 | 295 | 300 | |
| Ala | Leu | Asn | Pro | Ile | Asn | Asp | Thr | Val | Lys | Ser | Ala | Ile | Val | Phe | Leu | 305 | 310 | 315 | 320 |
| Arg | Phe | Asp | Ser | Asp | Gly | Val | Leu | Met | Ser | Asn | Ser | Ser | Met | Val | Gly | 325 | 330 | 335 | |
| Asp | Tyr | Trp | Asn | Phe | Arg | Glu | Gly | Gln | Thr | Thr | Gln | Ser | Val | Ala | Tyr | 340 | 345 | 350 | |
| Thr | Asn | Ala | Val | Gly | Phe | Met | Pro | Asn | Ile | Gly | Ala | Tyr | Pro | Lys | Thr | 355 | 360 | 365 | |
| Gln | Ser | Lys | Thr | Pro | Lys | Asn | Ser | Ile | Val | Ser | Gln | Val | Tyr | Leu | Thr | 370 | 375 | 380 | |
| Gly | Glu | Thr | Thr | Met | Pro | Met | Thr | Leu | Thr | Ile | Thr | Phe | Asn | Gly | Thr | 385 | 390 | 395 | 400 |
| Asp | Glu | Lys | Asp | Thr | Thr | Pro | Val | Ser | Thr | Tyr | Ser | Met | Thr | Phe | Thr | 405 | 410 | 415 | |
| Trp | Gln | Trp | Thr | Gly | Asp | Tyr | Lys | Asp | Lys | Asn | Ile | Thr | Phe | Ala | Thr | 420 | 425 | 430 | |
| Asn | Ser | Phe | Ser | Phe | Ser | Tyr | Ile | Ala | Gln | Glu | | | | | | 435 | 440 | | |

<210> 76
 <211> 1278
 <212> DNA
 <213> Chimpanzee Adenovirus- ChAd 63 Fiber

<400> 76
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 gacaacgcac cgaccgtgcc cttcatcaac ccccccttcg tctcttcaga tggattccaa 120
 gagaagcccc tgggggtgct gtccctgcga ctggccgacc ccgtcaccac caagaacggg 180
 gaaatcaccc tcaagctggg agagggggtg gacctcgact cctcgggaaa actcatctcc 240
 aacacggcca ccaaggccgc cgcccccttc agtttttcca acaacaccat ttcccttaac 300
 atggatcacc ccttttacac taaagatgga aaattatcct tacaagtttc tccaccatta 360
 aatatactga gaacaagcat tctaaacaca ctagctttag gttttggatc aggttttagga 420
 ctccgtggct ctgccttggc agtacagtta gtctctccac ttacatttga tactgatgga 480
 aacataaagc ttaccttaga cagaggtttg catgttacia caggagatgc aattgaaagc 540
 aacataagct gggctaaagg tttaaaattt gaagatggag ccatagcaac caacattgga 600
 aatgggttag agtttggaag cagtagtaca gaaacaggtg ttgatgatgc ttacccaatc 660
 caagttaaac ttggatctgg ccttagcttt gacagtacag gagccataat ggctggtaac 720
 aaagaagacg ataaactcac tttgtggaca acacctgatc catcgccaaa ctgtcaaata 780
 ctgcagaaa atgatgcaaa actaacactt tgcttgacta aatgtggtag tcaaatactg 840
 gccactgtgt cagctcttagt tgtaggaagt ggaaacctaa accccattac tggcacccga 900
 agcagtgctc aggtgtttct acgtttttagt gcaaacgggtg ttcttttaac agaacattct 960
 acactaaaaa aatactgggg gtataggcag ggagatagca tagatggcac tccatatacc 1020
 aatgctgtag gattcatgcc caatttaaaa gcttatccaa agtcacaaag ttctactact 1080
 aaaaataata tagtagggca agtatacatg aatggagatg tttcaaaacc tatgcttctc 1140
 actataaccc tcaatggtac tgatgacagc aacagtacat attcaatgtc attttcatat 1200
 acctggacta atggaagcta tgttggagca acatttgggg ctaactctta taccttctca 1260
 tacatcgccc aagaatga 1278

<210> 77
 <211> 425
 <212> PRT
 <213> Chimpanzee Adenovirus- ChAd 63 Fiber

<400> 77
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 1 5 10 15
 Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20 25 30
 Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35 40 45
 Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50 55 60
 Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65 70 75 80
 Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85 90 95
 Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
 100 105 110
 Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
 115 120 125
 Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
 130 135 140
 Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
 145 150 155 160
 Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
 165 170 175
 Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
 180 185 190
 Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
 195 200 205

Ser Thr Glu Thr Gly Val Asp Asp Ala Tyr Pro Ile Gln Val Lys Leu
 210 215 220
 Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
 225 230 235 240
 Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
 245 250 255
 Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
 260 265 270
 Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
 275 280 285
 Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
 290 295 300
 Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
 305 310 315 320
 Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
 325 330 335
 Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
 340 345 350
 Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
 355 360 365
 Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
 370 375 380
 Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
 385 390 395 400
 Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
 405 410 415
 Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
 420 425

<210> 78

<211> 1338

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 82 Fiber

<400> 78

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 gacaacgcac cgactgtgcc cttcatcaac cctcccttcg tctcttcaga tggattccaa 120
 gaaaagcccc tgggggtggt gtccctgcga ctggccgatc ccgtcaccac caagaacggg 180
 gctgtcacc tcaagctggg ggagggggtg gacctcgacg actcgggaaa actcatctcc 240
 aaaaatgcca ccaaggccac tgcccctctc agtatttcca acaacaccat ttcccttaac 300
 atggataccc ctctttacaa caacaatgga aagctaggta tgaaggtaac cgcaccatta 360
 aagatattag acacagatct actaaaaaca cttgttggtg cttatgggca gggattagga 420
 acaaacacca atggtgctct tgttgcccaa ctagcatacc cacttgtttt taataccgct 480
 agcaaaattg cccttaattt aggcaatgga ccattaaaag tggatgcaaa tagactgaac 540
 attaattgca aaagaggtat ctatgtcact accacaaaag atgcactgga gattaatatc 600
 agttgggcaa atgctatgac atttatagga aatgccattg gtgtcaatat tgacacaaaa 660
 aaaggcctac agttcggcac ttcaagcact gaaacagatg ttaaaaatgc ttttccactc 720
 caagtaaaac ttggagctgg tcttacattt gacagcacag gtgccattgt tgcttggaac 780
 aaagaagatg acaaacttac actgtggacc acagccgatc catctccaaa ctgtcacata 840
 tattctgcaa aggatgctaa gcttacactc tgcttgacaa agtgtggtag tcagactactg 900
 ggcaactgtt tctcatagc tgttgatact ggtagcttaa atccaataac aggaaaagta 960
 accactgctc ttgtttcact taaattcgat gccaatggag ttttgcaagc cagttcaaca 1020
 ctagataaag aatattggaa tttcagaaaa ggagatgtga cacctgctga cccctacact 1080
 aatgctatag gctttatgcc caaccttaat gcatacccaa aaaacacaaa cgcagctgca 1140
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 ataattacat ttaatgaaac cagtgatgaa tcctgtactt attgcattaa ctttcagtgg 1260
 cggtaggggaa ctgaccaata taaagatgaa acacttgcag tcagttcatt caccttctca 1320
 tacattgcta aagaataa 1338

<210> 79

<211> 445

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 82 Fiber

<400> 79

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Lys | Lys | Arg | Ala | Arg | Val | Asp | Asp | Asp | Phe | Asp | Pro | Val | Tyr |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Pro | Tyr | Asp | Ala | Asp | Asn | Ala | Pro | Thr | Val | Pro | Phe | Ile | Asn | Pro | Pro |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Phe | Val | Ser | Ser | Asp | Gly | Phe | Gln | Glu | Lys | Pro | Leu | Gly | Val | Leu | Ser |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Leu | Arg | Leu | Ala | Asp | Pro | Val | Thr | Thr | Lys | Asn | Gly | Ala | Val | Thr | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Lys | Leu | Gly | Glu | Gly | Val | Asp | Leu | Asp | Asp | Ser | Gly | Lys | Leu | Ile | Ser |
| 65 | | | | | 70 | | | | | 75 | | | | 80 | |
| Lys | Asn | Ala | Thr | Lys | Ala | Thr | Ala | Pro | Leu | Ser | Ile | Ser | Asn | Asn | Thr |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ile | Ser | Leu | Asn | Met | Asp | Thr | Pro | Leu | Tyr | Asn | Asn | Asn | Gly | Lys | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Gly | Met | Lys | Val | Thr | Ala | Pro | Leu | Lys | Ile | Leu | Asp | Thr | Asp | Leu | Leu |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Lys | Thr | Leu | Val | Val | Ala | Tyr | Gly | Gln | Gly | Leu | Gly | Thr | Asn | Thr | Asn |
| | 130 | | | | | | 135 | | | | | 140 | | | |
| Gly | Ala | Leu | Val | Ala | Gln | Leu | Ala | Tyr | Pro | Leu | Val | Phe | Asn | Thr | Ala |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ser | Lys | Ile | Ala | Leu | Asn | Leu | Gly | Asn | Gly | Pro | Leu | Lys | Val | Asp | Ala |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Asn | Arg | Leu | Asn | Ile | Asn | Cys | Lys | Arg | Gly | Ile | Tyr | Val | Thr | Thr | Thr |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Asp | Ala | Leu | Glu | Ile | Asn | Ile | Ser | Trp | Ala | Asn | Ala | Met | Thr | Phe |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ile | Gly | Asn | Ala | Ile | Gly | Val | Asn | Ile | Asp | Thr | Lys | Lys | Gly | Leu | Gln |
| | 210 | | | | | 215 | | | | | | 220 | | | |
| Phe | Gly | Thr | Ser | Ser | Thr | Glu | Thr | Asp | Val | Lys | Asn | Ala | Phe | Pro | Leu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gln | Val | Lys | Leu | Gly | Ala | Gly | Leu | Thr | Phe | Asp | Ser | Thr | Gly | Ala | Ile |
| | | | | 245 | | | | | | 250 | | | | 255 | |
| Val | Ala | Trp | Asn | Lys | Glu | Asp | Asp | Lys | Leu | Thr | Leu | Trp | Thr | Thr | Ala |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Asp | Pro | Ser | Pro | Asn | Cys | His | Ile | Tyr | Ser | Ala | Lys | Asp | Ala | Lys | Leu |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Thr | Leu | Cys | Leu | Thr | Lys | Cys | Gly | Ser | Gln | Ile | Leu | Gly | Thr | Val | Ser |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Leu | Ile | Ala | Val | Asp | Thr | Gly | Ser | Leu | Asn | Pro | Ile | Thr | Gly | Lys | Val |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Thr | Thr | Ala | Leu | Val | Ser | Leu | Lys | Phe | Asp | Ala | Asn | Gly | Val | Leu | Gln |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Ala | Ser | Ser | Thr | Leu | Asp | Lys | Glu | Tyr | Trp | Asn | Phe | Arg | Lys | Gly | Asp |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Thr | Pro | Ala | Asp | Pro | Tyr | Thr | Asn | Ala | Ile | Gly | Phe | Met | Pro | Asn |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Leu | Asn | Ala | Tyr | Pro | Lys | Asn | Thr | Asn | Ala | Ala | Ala | Lys | Ser | His | Ile |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Val | Gly | Lys | Val | Tyr | Leu | His | Gly | Asp | Val | Ser | Lys | Pro | Leu | Asp | Leu |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Ile | Ile | Thr | Phe | Asn | Glu | Thr | Ser | Asp | Glu | Ser | Cys | Thr | Tyr | Cys | Ile |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Phe | Gln | Trp | Arg | Trp | Gly | Thr | Asp | Gln | Tyr | Lys | Asp | Glu | Thr | Leu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Ala | Val | Ser | Ser | Phe | Thr | Phe | Ser | Tyr | Ile | Ala | Lys | Glu | | | |
| | | 435 | | | | | 440 | | | | | 445 | | | |

<210> 80
 <211> 445
 <212> PRT
 <213> Chimpanzee Adenovirus- CV23/Pan5 Fiber

<400> 80

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Lys | Lys | Arg | Val | Arg | Val | Asp | Asp | Asp | Phe | Asp | Pro | Val | Tyr |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Pro | Tyr | Asp | Ala | Asp | Asn | Ala | Pro | Thr | Val | Pro | Phe | Ile | Asn | Pro | Pro |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Phe | Val | Ser | Ser | Asp | Gly | Phe | Gln | Glu | Lys | Pro | Leu | Gly | Val | Leu | Ser |
| | 35 | | | | | | 40 | | | | | 45 | | | |
| Leu | Arg | Leu | Ala | Asp | Pro | Val | Thr | Thr | Lys | Asn | Gly | Glu | Ile | Thr | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Lys | Leu | Gly | Asp | Gly | Val | Asp | Leu | Asp | Ser | Ser | Gly | Lys | Leu | Ile | Ser |
| 65 | | | | | 70 | | | | 75 | | | | | | 80 |
| Asn | Thr | Ala | Thr | Lys | Ala | Ala | Ala | Pro | Leu | Ser | Phe | Ser | Asn | Asn | Thr |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ile | Ser | Leu | Asn | Met | Asp | Thr | Pro | Phe | Tyr | Asn | Asn | Asn | Gly | Lys | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Gly | Met | Lys | Val | Thr | Ala | Pro | Leu | Lys | Ile | Leu | Asp | Thr | Asp | Leu | Leu |
| | 115 | | | | | | 120 | | | | | 125 | | | |
| Lys | Thr | Leu | Val | Val | Ala | Tyr | Gly | Gln | Gly | Leu | Gly | Thr | Asn | Thr | Thr |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Gly | Ala | Leu | Val | Ala | Gln | Leu | Ala | Ser | Pro | Leu | Ala | Phe | Asp | Ser | Asn |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ser | Lys | Ile | Ala | Leu | Asn | Leu | Gly | Asn | Gly | Pro | Leu | Lys | Val | Asp | Ala |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Asn | Arg | Leu | Asn | Ile | Asn | Cys | Asn | Arg | Gly | Leu | Tyr | Val | Thr | Thr | Thr |
| | | 180 | | | | | | 185 | | | | | 190 | | |
| Lys | Asp | Ala | Leu | Glu | Ala | Asn | Ile | Ser | Trp | Ala | Asn | Ala | Met | Thr | Phe |
| | 195 | | | | | | 200 | | | | | 205 | | | |
| Ile | Gly | Asn | Ala | Met | Gly | Val | Asn | Ile | Asp | Thr | Gln | Lys | Gly | Leu | Gln |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Phe | Gly | Thr | Thr | Ser | Thr | Val | Ala | Asp | Val | Lys | Asn | Ala | Tyr | Pro | Ile |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gln | Ile | Lys | Leu | Gly | Ala | Gly | Leu | Thr | Phe | Asp | Ser | Thr | Gly | Ala | Ile |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Val | Ala | Trp | Asn | Lys | Asp | Asp | Asp | Lys | Leu | Thr | Leu | Trp | Thr | Thr | Ala |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| Asp | Pro | Ser | Pro | Asn | Cys | His | Ile | Tyr | Ser | Glu | Lys | Asp | Ala | Lys | Leu |
| | 275 | | | | | | 280 | | | | | 285 | | | |
| Thr | Leu | Cys | Leu | Thr | Lys | Cys | Gly | Ser | Gln | Ile | Leu | Gly | Thr | Val | Ser |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Leu | Ile | Ala | Val | Asp | Thr | Gly | Ser | Leu | Asn | Pro | Ile | Thr | Gly | Thr | Val |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Thr | Thr | Ala | Leu | Val | Ser | Leu | Lys | Phe | Asp | Ala | Asn | Gly | Val | Leu | Gln |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Ser | Ser | Ser | Thr | Leu | Asp | Ser | Asp | Tyr | Trp | Asn | Phe | Arg | Gln | Gly | Asp |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Thr | Pro | Ala | Glu | Ala | Tyr | Thr | Asn | Ala | Ile | Gly | Phe | Met | Pro | Asn |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Leu | Lys | Ala | Tyr | Pro | Lys | Asn | Thr | Ser | Gly | Ala | Ala | Lys | Ser | His | Ile |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Val | Gly | Lys | Val | Tyr | Leu | His | Gly | Asp | Thr | Gly | Lys | Pro | Leu | Asp | Leu |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Ile | Ile | Thr | Phe | Asn | Glu | Thr | Ser | Asp | Glu | Ser | Cys | Thr | Tyr | Cys | Ile |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Phe | Gln | Trp | Gln | Trp | Gly | Ala | Asp | Gln | Tyr | Lys | Asn | Glu | Thr | Leu |
| | | 420 | | | | | | 425 | | | | | 430 | | |

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
 435 440 445

<210> 81

<211> 443

<212> PRT

<213> Chimpanzee Adenovirus- CV32/Pan6 Fiber

<400> 81

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Lys | Lys | Arg | Val | Arg | Val | Asp | Asp | Asp | Phe | Asp | Pro | Val | Tyr |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Pro | Tyr | Asp | Ala | Asn | Ala | Pro | Thr | Val | Pro | Phe | Ile | Asn | Pro | Pro | |
| | | | 20 | | | | | 25 | | | | 30 | | | |
| Phe | Val | Ser | Ser | Asp | Gly | Phe | Gln | Glu | Lys | Pro | Leu | Gly | Val | Leu | Ser |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Leu | Arg | Leu | Ala | Asp | Pro | Val | Thr | Thr | Lys | Asn | Gly | Glu | Ile | Thr | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Lys | Leu | Gly | Glu | Gly | Val | Asp | Leu | Asp | Ser | Ser | Gly | Lys | Leu | Ile | Ser |
| 65 | | | | | 70 | | | | 75 | | | | | | 80 |
| Asn | Thr | Ala | Thr | Lys | Ala | Ala | Ala | Pro | Leu | Ser | Ile | Ser | Asn | Asn | Thr |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ile | Ser | Leu | Lys | Thr | Ala | Ala | Pro | Phe | Tyr | Asn | Asn | Asn | Gly | Thr | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Ser | Leu | Asn | Val | Ser | Thr | Pro | Leu | Ala | Val | Phe | Pro | Thr | Phe | Asn | Thr |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Leu | Gly | Ile | Ser | Leu | Gly | Asn | Gly | Leu | Gln | Thr | Ser | Asn | Lys | Leu | Leu |
| | 130 | | | | | 135 | | | | | | 140 | | | |
| Thr | Val | Gln | Leu | Thr | His | Pro | Leu | Thr | Phe | Ser | Ser | Asn | Ser | Ile | Thr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Val | Lys | Thr | Asp | Lys | Gly | Leu | Tyr | Ile | Asn | Ser | Ser | Gly | Asn | Arg | Gly |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Leu | Glu | Ala | Asn | Ile | Ser | Leu | Lys | Arg | Gly | Leu | Val | Phe | Asp | Gly | Asn |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ala | Ile | Ala | Thr | Tyr | Ile | Gly | Asn | Gly | Leu | Asp | Tyr | Gly | Ser | Tyr | Asp |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ser | Asp | Gly | Lys | Thr | Arg | Pro | Val | Ile | Thr | Lys | Ile | Gly | Ala | Gly | Leu |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Asn | Phe | Asp | Ala | Asn | Lys | Ala | Ile | Ala | Val | Lys | Leu | Gly | Thr | Gly | Leu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Ser | Phe | Asp | Ser | Ala | Gly | Ala | Leu | Thr | Ala | Gly | Asn | Lys | Gln | Asp | Asp |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Lys | Leu | Thr | Leu | Trp | Thr | Thr | Pro | Asp | Pro | Ser | Pro | Asn | Cys | Gln | Leu |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Leu | Ser | Asp | Arg | Asp | Ala | Lys | Phe | Thr | Leu | Cys | Leu | Thr | Lys | Cys | Gly |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ser | Gln | Ile | Leu | Gly | Thr | Val | Ala | Val | Ala | Ala | Val | Thr | Val | Gly | Ser |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Ala | Leu | Asn | Pro | Ile | Asn | Asp | Thr | Val | Lys | Ser | Ala | Ile | Val | Phe | Leu |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Arg | Phe | Asp | Ser | Asp | Gly | Val | Leu | Met | Ser | Asn | Ser | Ser | Met | Val | Gly |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Asp | Tyr | Trp | Asn | Phe | Arg | Glu | Gly | Gln | Thr | Thr | Gln | Ser | Val | Ala | Tyr |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | Asn | Ala | Val | Gly | Phe | Met | Pro | Asn | Ile | Gly | Ala | Tyr | Pro | Lys | Thr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Gln | Ser | Lys | Thr | Pro | Lys | Asn | Ser | Ile | Val | Ser | Gln | Val | Tyr | Leu | Thr |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Gly | Glu | Thr | Thr | Met | Pro | Met | Thr | Leu | Thr | Ile | Thr | Phe | Asn | Gly | Thr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Asp | Glu | Lys | Asp | Thr | Thr | Pro | Val | Ser | Thr | Tyr | Ser | Met | Thr | Phe | Thr |
| | | | | 405 | | | | | 410 | | | | | 415 | |

Trp Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr
 420 425 430
 Asn Ser Phe Ser Phe Ser Tyr Ile Ala Gln Glu
 435 440

<210> 82

<211> 443

<212> PRT

<213> Chimpanzee Adenovirus- CV33/Pan7 Fiber

<400> 82

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1 5 10 15
 Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20 25 30
 Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35 40 45
 Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50 55 60
 Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65 70 75 80
 Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85 90 95
 Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Thr Lys Asp Gly Lys Leu
 100 105 110
 Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Lys Ser Thr Ile Leu
 115 120 125
 Asn Thr Leu Ala Val Ala Tyr Gly Ser Gly Leu Gly Leu Ser Gly Gly
 130 135 140
 Thr Ala Leu Ala Val Gln Leu Ala Ser Pro Leu Thr Phe Asp Glu Lys
 145 150 155 160
 Gly Asn Ile Lys Ile Asn Leu Ala Ser Gly Pro Leu Thr Val Asp Ala
 165 170 175
 Ser Arg Leu Ser Ile Asn Cys Lys Arg Gly Val Thr Val Thr Thr Ser
 180 185 190
 Gly Asp Ala Ile Glu Ser Asn Ile Ser Trp Pro Lys Gly Ile Arg Phe
 195 200 205
 Glu Gly Asn Gly Ile Ala Ala Asn Ile Gly Arg Gly Leu Glu Phe Gly
 210 215 220
 Thr Thr Ser Thr Glu Thr Asp Val Thr Asp Ala Tyr Pro Ile Gln Val
 225 230 235 240
 Lys Leu Gly Thr Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile Val Ala
 245 250 255
 Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala Asp Pro
 260 265 270
 Ser Pro Asn Cys Lys Ile Tyr Ser Glu Lys Asp Ala Lys Leu Thr Leu
 275 280 285
 Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Thr Val Leu
 290 295 300
 Ala Val Asn Asn Gly Ser Leu Asn Pro Ile Thr Asn Thr Val Ser Thr
 305 310 315 320
 Ala Leu Val Ser Leu Lys Phe Asp Ala Ser Gly Val Leu Leu Ser Ser
 325 330 335
 Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp Val Thr
 340 345 350
 Pro Ala Glu Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn Ile Lys
 355 360 365
 Ala Tyr Pro Lys Asn Thr Ser Ala Ala Ser Lys Ser His Ile Val Ser
 370 375 380
 Gln Val Tyr Leu Asn Gly Asp Glu Ala Lys Pro Leu Met Leu Ile Ile
 385 390 395 400

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Phe | Asn | Glu | Thr | Glu | Asp | Ala | Thr | Cys | Thr | Tyr | Ser | Ile | Thr | Phe |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Gln | Trp | Lys | Trp | Asp | Ser | Thr | Lys | Tyr | Thr | Gly | Glu | Thr | Leu | Ala | Thr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Ser | Ser | Phe | Thr | Phe | Ser | Tyr | Ile | Ala | Gln | Glu | | | | | |
| | | 435 | | | | | 440 | | | | | | | | |

<210> 83

<211> 543

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 3 Fiber

<400> 83

| | | | | | | | | | | | | | | | |
|----------|-----|-----|-----|----------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----------|-----|
| Met 1 | Lys | Arg | Thr | Lys 5 | Thr | Ser | Asp | Glu | Ser 10 | Phe | Asn | Pro | Val | Tyr 15 | Pro |
| Tyr | Asp | Thr | Glu | Ser | Gly | Pro | Pro | Ser | Val | Pro | Phe | Leu | Thr | Pro | Pro |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Phe | Val | Ser | Pro | Asp | Gly | Phe | Gln | Glu | Ser | Pro | Pro | Gly | Val | Leu | Ser |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Leu | Asn | Leu | Ala | Glu | Pro | Leu | Val | Thr | Ser | His | Gly | Met | Leu | Ala | Leu |
| | 50 | | | | | 55 | | | | 60 | | | | | |
| Lys | Met | Gly | Ser | Gly | Leu | Ser | Leu | Asp | Asp | Ala | Gly | Asn | Leu | Thr | Ser |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Gln | Asp | Ile | Thr | Thr | Ala | Ser | Pro | Pro | Leu | Lys | Lys | Thr | Lys | Thr | Asn |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Leu | Ser | Leu | Glu | Thr | Ser | Ser | Pro | Leu | Thr | Val | Ser | Thr | Ser | Gly | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Leu | Thr | Val | Ala | Ala | Ala | Ala | Pro | Leu | Ala | Val | Ala | Gly | Thr | Ser | Leu |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Thr | Met | Gln | Ser | Glu | Ala | Pro | Leu | Thr | Val | Gln | Asp | Ala | Lys | Leu | Thr |
| | 130 | | | | | 135 | | | | 140 | | | | | |
| Leu | Ala | Thr | Lys | Gly | Pro | Leu | Thr | Val | Ser | Glu | Gly | Lys | Leu | Ala | Leu |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Gln | Thr | Ser | Ala | Pro | Leu | Thr | Ala | Ala | Asp | Ser | Ser | Thr | Leu | Thr | Val |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Ser | Ala | Thr | Pro | Pro | Ile | Asn | Val | Ser | Ser | Gly | Ser | Leu | Gly | Leu | Asp |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Met | Glu | Asp | Pro | Met | Tyr | Thr | His | Asp | Gly | Lys | Leu | Gly | Ile | Arg | Ile |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Gly | Gly | Pro | Leu | Arg | Val | Val | Asp | Ser | Leu | His | Thr | Leu | Thr | Val | Val |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Thr | Gly | Asn | Gly | Leu | Thr | Val | Asp | Asn | Asn | Ala | Leu | Gln | Thr | Arg | Val |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Thr | Gly | Ala | Leu | Gly | Tyr | Asp | Thr | Ser | Gly | Asn | Leu | Gln | Leu | Arg | Ala |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Ala | Gly | Gly | Met | Arg | Ile | Asp | Ala | Asn | Gly | Gln | Leu | Ile | Leu | Asn | Val |
| | | | 260 | | | | 265 | | | | | | 270 | | |
| Ala | Tyr | Pro | Phe | Asp | Ala | Gln | Asn | Asn | Leu | Ser | Leu | Arg | Leu | Gly | Gln |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Gly | Pro | Leu | Tyr | Ile | Asn | Thr | Asp | His | Asn | Leu | Asp | Leu | Asn | Cys | Asn |
| | 290 | | | | | 295 | | | | 300 | | | | | |
| Arg | Gly | Leu | Thr | Thr | Thr | Thr | Thr | Asn | Asn | Thr | Lys | Lys | Leu | Glu | Thr |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Lys | Ile | Ser | Ser | Gly | Leu | Asp | Tyr | Asp | Thr | Asn | Gly | Ala | Val | Ile | Ile |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Lys | Leu | Gly | Thr | Gly | Leu | Ser | Phe | Asp | Asn | Thr | Gly | Ala | Leu | Thr | Val |
| | | | 340 | | | | 345 | | | | | | 350 | | |
| Gly | Asn | Thr | Gly | Asp | Asp | Lys | Leu | Thr | Leu | Trp | Thr | | | | |

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Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Ser Val Ala Ala Leu
385          390          395          400
Ala Val Ser Gly Asn Leu Ala Ser Ile Thr Gly Thr Val Ala Ser Val
          405          410          415
Thr Ile Phe Leu Arg Phe Asp Gln Asn Gly Val Leu Met Glu Asn Ser
          420          425          430
Ser Leu Asp Arg Gln Tyr Trp Asn Phe Arg Asn Gly Asn Ser Thr Asn
          435          440          445
Ala Ala Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Ala Ala
          450          455          460
Tyr Pro Lys Thr Gln Ser Gln Thr Ala Lys Asn Asn Ile Val Ser Gln
465          470          475          480
Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Met Thr Leu Thr Ile Thr
          485          490          495
Leu Asn Gly Thr Asn Glu Ser Ser Glu Thr Ser Gln Val Ser His Tyr
          500          505          510
Ser Met Ser Phe Thr Trp Ala Trp Glu Ser Gly Gln Tyr Ala Thr Glu
          515          520          525
Thr Phe Ala Thr Asn Ser Phe Thr Phe Ser Tyr Ile Ala Glu Gln
530          535          540

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<210> 84

<211> 445

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 6 Fiber

<400> 84

```

Met Ser Lys Lys Arg Ala Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1          5          10          15
Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
          20          25          30
Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
          35          40          45
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Ala Val Thr Leu
          50          55          60
Lys Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65          70          75          80
Lys Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Asn Thr
          85          90          95
Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Asn Asn Asn Gly Lys Leu
          100          105          110
Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
          115          120          125
Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Asn
          130          135          140
Gly Ala Leu Val Ala Gln Leu Ala Tyr Pro Leu Val Phe Asn Thr Ala
145          150          155          160
Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
          165          170          175
Asn Arg Leu Asn Ile Asn Cys Lys Arg Gly Ile Tyr Val Thr Thr
          180          185          190
Lys Asp Ala Leu Glu Ile Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
          195          200          205
Ile Gly Asn Ala Ile Gly Val Asn Ile Asp Thr Lys Lys Gly Leu Gln
210          215          220
Phe Gly Thr Ser Ser Thr Glu Thr Asp Val Lys Asn Ala Phe Pro Leu
225          230          235          240
Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
          245          250          255
Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
260          265          270

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Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys Asp Ala Lys Leu
    275                280                285
Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                295                300
Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Lys Val
    305                310                315                320
Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
    325                330                335
Ala Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
    340                345                350
Val Thr Pro Ala Asp Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
    355                360                365
Leu Asn Ala Tyr Pro Lys Asn Thr Asn Ala Ala Ala Lys Ser His Ile
    370                375                380
Val Gly Lys Val Tyr Leu His Gly Asp Glu Ser Lys Pro Leu Asp Leu
    385                390                395                400
Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
    405                410                415
Asn Phe Gln Trp Gln Trp Gly Thr Asp Gln Tyr Lys Asp Glu Thr Leu
    420                425                430
Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
    435                440                445

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<210> 85

<211> 322

<212> PRT

<213> Chimpanzee Adenovirus- C1 Fiber

<400> 85

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Met Ala Lys Arg Thr Arg Leu Ser Ser Ser Phe Asn Pro Val Tyr Pro
  1          5          10
Tyr Glu Asp Glu Asn Ser Ser His Pro Phe Ile Asn Pro Gly Phe Ile
    20          25          30
Ser Pro Asn Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu Asn
    35          40          45
Cys Val Ala Pro Leu Thr Thr Ala Asn Gly Ala Leu Asp Ile Lys Val
    50          55          60
Gly Gly Gly Leu Lys Val Asn Ser Thr Asp Gly Phe Leu Glu Glu Asn
    65          70          75          80
Ile Asn Ile Thr Ser Pro Leu Thr Lys Ser Asn His Ser Ile Gly Leu
    85          90          95
Glu Trp Ser Asp Gly Leu Gln Thr Asn Glu Ala Lys Leu Cys Val Lys
    100         105         110
Leu Gly Lys Gly Leu Val Phe Asp Ser Ser Ser Ala Ile Ala Met Glu
    115         120         125
Asn Asn Thr Leu Trp Thr Gly Ala Lys Pro Ser Ala Asn Cys Val Ile
    130         135         140
Lys Glu Gly Glu Asp Ser Pro Asp Cys Lys Leu Thr Leu Val Leu Val
    145         150         155         160
Lys Asn Gly Gly Leu Val Asn Gly Tyr Ile Thr Leu Met Gly Asp Ser
    165         170         175
Glu Tyr Thr Asn Thr Leu Phe Lys Asn Lys Gln Val Thr Ile Asp Val
    180         185         190
Asn Leu Ala Phe Asp Asn Thr Gly Gln Ile Ile Thr Tyr Leu Ser Ser
    195         200         205
Leu Lys Ser Asn Leu Asn Phe Lys Asp Asn Gln Asn Met Ala Thr Gly
    210         215         220
Thr Ile Thr Ser Ala Lys Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro
    225         230         235         240
Phe Ile Thr Tyr Ala Thr Gln Ser Leu Asn Glu Asp Tyr Ile Tyr Gly
    245         250         255

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Glu Cys Tyr Tyr Lys Ser Thr Asn Gly Thr Leu Phe Pro Leu Lys Val
 260 265 270
 Thr Val Thr Leu Asn Arg Arg Met Ser Ala Ser Gly Met Ala Tyr Ala
 275 280 285
 Met Asn Phe Ser Trp Ser Leu Asn Ala Glu Glu Ala Pro Glu Thr Thr
 290 295 300
 Glu Val Thr Leu Ile Thr Ser Pro Phe Phe Phe Ser Tyr Ile Arg Glu
 305 310 315 320
 Asp Asp

<210> 86

<211> 425

<212> PRT

<213> Chimpanzee Adenovirus- CV68 Fiber

<400> 86

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
 1 5 10 15
 Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
 20 25 30
 Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
 35 40 45
 Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
 50 55 60
 Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65 70 75 80
 Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85 90 95
 Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
 100 105 110
 Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
 115 120 125
 Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
 130 135 140
 Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
 145 150 155 160
 Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
 165 170 175
 Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
 180 185 190
 Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
 195 200 205
 Ser Thr Glu Thr Gly Val Asp Asp Ala Tyr Pro Ile Gln Val Lys Leu
 210 215 220
 Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
 225 230 235 240
 Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
 245 250 255
 Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
 260 265 270
 Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
 275 280 285
 Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
 290 295 300
 Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
 305 310 315 320
 Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
 325 330 335
 Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
 340 345 350

```

Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
    355                                360                365
Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
    370                                375                380
Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
385                                390                395                400
Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
    405                                410                415
Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
    420                                425

```

<210> 87

<211> 954

<212> PRT

<213> Chimpanzee Adenovirus- ChAd20 Hexon

<400> 87

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Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
 1                                5                                10                15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
    20                                25                30
Arg Ala Thr Glu Ser Tyr Phe Ser Leu Ser Asn Lys Phe Arg Asn Pro
    35                                40                45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                                55                60
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65                                70                75                80
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
    85                                90                95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
    100                                105                110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
    115                                120                125
Ala Pro Asn Pro Cys Glu Trp Asp Glu Ala Ala Thr Ala Leu Asp Ile
    130                                135                140
Asp Leu Asn Ala Glu Asp Asp Glu Glu Ser Asp Glu Ala Gln Gly Glu
145                                150                155                160
Ala Asp Gln Gln Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly
    165                                170                175
Gln Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Ile Asp Ala Ala Ser
    180                                185                190
Gln Ala Gln Thr Pro Val Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro
    195                                200                205
Gln Val Gly Glu Ser Gln Trp Asn Glu Thr Glu Ile Ser Tyr Gly Ala
    210                                215                220
Gly Arg Val Leu Lys Lys Thr Thr Leu Met Lys Pro Cys Tyr Gly Ser
225                                230                235                240
Tyr Ala Arg Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Leu Glu
    245                                250                255
Gln Asp Gly Lys Lys Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr
    260                                265                270
Thr Gln Ala Ala Ala Gly Asn Ser Asp Asn Pro Thr Pro Lys Val Val
    275                                280                285
Leu Tyr Ser Glu Asp Val Asn Leu Glu Thr Pro Asp Thr His Ile Ser
    290                                295                300
Tyr Met Pro Thr Asn Asn Glu Thr Asn Ser Arg Glu Leu Leu Gly Gln
305                                310                315                320
Gln Ala Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe
    325                                330                335
Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala
    340                                345                350

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| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Met | Gly | Asp | Arg | Thr | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | |
| Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Thr | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | |
| Cys | Phe | Pro | Leu | Gly | Gly | Val | Ile | Asn | Thr | Glu | Thr | Phe | Thr | Lys | Val | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Lys | Pro | Lys | Ala | Ala | Gln | Asp | Ala | Gln | Trp | Glu | Lys | Asp | Ser | Glu | Phe | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| Ser | Asp | Lys | Asn | Glu | Ile | Arg | Val | Gly | Asn | Asn | Phe | Ala | Met | Glu | Ile | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| Asn | Leu | Asn | Ala | Asn | Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ser | Asn | Val | Ala | | |
| 465 | | | | | 470 | | | | 475 | | | | | | 480 | | |
| Leu | Tyr | Leu | Pro | Asp | Lys | Leu | Lys | Tyr | Thr | Pro | Ser | Asn | Val | Gln | Ile | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | |
| Ser | Asn | Asn | Pro | Asn | Ser | Tyr | Asp | Tyr | Met | Asn | Lys | Arg | Val | Val | Ala | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| Pro | Gly | Leu | Val | Asp | Cys | Tyr | Ile | Asn | Leu | Gly | Ala | Arg | Trp | Ser | Leu | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| Asp | Tyr | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | | |
| | 530 | | | | | 535 | | | | 540 | | | | | | | |
| Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | | |
| 545 | | | | | 550 | | | | 555 | | | | | | 560 | | |
| His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Asn | Leu | Leu | Leu | | |
| | | | | 565 | | | | | 570 | | | | | 575 | | | |
| Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | | |
| | | | 580 | | | | | 585 | | | | | 590 | | | | |
| Met | Val | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Val | Asp | Gly | Ala | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| Ser | Ile | Lys | Phe | Glu | Ser | Ile | Cys | Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | | |
| | 610 | | | | | 615 | | | | 620 | | | | | | | |
| Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | | |
| 625 | | | | | 630 | | | | 635 | | | | | | 640 | | |
| Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | | |
| | | | | 645 | | | | | 650 | | | | | 655 | | | |
| Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | | |
| | | | 660 | | | | | 665 | | | | | 670 | | | | |
| Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ala | Phe | Thr | Arg | Leu | Lys | Thr | Lys | | |
| | | 675 | | | | | 680 | | | | | 685 | | | | | |
| Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Tyr | Thr | Tyr | Ser | | |
| | 690 | | | | | 695 | | | | 700 | | | | | | | |
| Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | Thr | Phe | | |
| 705 | | | | | 710 | | | | 715 | | | | | | 720 | | |
| Lys | Lys | Val | Ser | Val | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | Gly | Asn | | |
| | | | | 725 | | | | | 730 | | | | | 735 | | | |
| Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Ser | Val | Asp | | |
| | | | 740 | | | | | 745 | | | | | 750 | | | | |
| Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | Trp | Phe | | |
| | | 755 | | | | | 760 | | | | | 765 | | | | | |
| Leu | Val | Gln | Met | Leu | Ala | Asn | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | Phe | Tyr | | |
| | 770 | | | | | 775 | | | | | 780 | | | | | | |
| Ile | Pro | Glu | Ser | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | Asn | Phe | | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | | |
| Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Gln | Thr | Lys | Tyr | Lys | Asp | Tyr | | |
| | | | | 805 | | | | | 810 | | | | | 815 | | | |
| Gln | Glu | Val | Gly | Ile | Ile | His | Gln | His | Asn | Asn | Ser | Gly | Phe | Val | Gly | | |
| | | | 820 | | | | | 825 | | | | | 830 | | | | |


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Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe
      835      840      845
Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys
      850      855      860
Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn
865      870      875      880
Phe Met Ser Met Gly Ala Leu Ser Asp Leu Gly Gln Asn Leu Leu Tyr
      885      890      895
Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met
      900      905      910
Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val
      915      920      925
Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg
      930      935      940
Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945      950

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<210> 88

<211> 940

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 4 Hexon

<400> 88

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
 1      5      10      15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
      20      25      30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
      35      40      45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
      50      55      60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65      70      75      80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
      85      90      95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
      100      105      110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
      115      120      125
Ala Pro Asn Ser Ser Gln Trp Glu Gln Lys Lys Thr Gly Asn Asn Ala
      130      135      140
Asn Gly Asp Thr Glu Asn Val Thr Tyr Gly Val Ala Ala Met Gly Gly
145      150      155      160
Ile Asp Ile Asp Lys Asn Gly Leu Gln Ile Gly Thr Asp Asp Thr Lys
      165      170      175
Asp Asp Asp Asn Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro
      180      185      190
Gln Ile Gly Glu Glu Asn Trp Gln Glu Thr Tyr Ser Tyr Tyr Gly Gly
      195      200      205
Arg Ala Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe
      210      215      220
Ala Arg Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Ile Lys Thr Asp
225      230      235      240
Gly Asp Val Lys Ser Phe Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
      245      250      255
Asn Ser Gly Ala Gly Asn Gly Thr Asn Val Asn Asp Asp Pro Asp Met
      260      265      270
Val Met Tyr Thr Glu Asn Val Asn Leu Glu Thr Pro Asp Thr His Ile
      275      280      285
Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Lys Val Asn Leu Cys
290      295      300

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Tyr | Cys | Phe | Pro | Leu | Asp | Gly | Ala | Gly | Thr | Asn | Ser | Val | Tyr | Gln | Gly |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Val | Lys | Pro | Lys | Thr | Asp | Asn | Gly | Asn | Asp | Gln | Trp | Glu | Thr | Asp | Ser |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Thr | Val | Ser | Ser | His | Asn | Gln | Ile | Cys | Lys | Gly | Asn | Ile | Tyr | Ala | Met |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Glu | Ile | Asn | Leu | Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe | Leu | Tyr | Ser | Asn |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Val | Pro | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Val | Asn | Met | Ile | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Thr | Asp |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Gly | Ala | Ser | Ile | Ser | Phe | Thr | Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Thr | Arg | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Thr | Phe | Lys | Lys | Val | Ser | Ile | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | His | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Phe | Tyr | Val | Pro | Glu | Gly | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg |
| | 770 | | | | | 775 | | | | | 780 | | | | |

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Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn Tyr Lys
785                               790       795
Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe
                               805       810       815
Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala
                               820       825       830
Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr
                               835       840       845
Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser
850                               855       860
Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met
865                               870       875
Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp
                               885       890       895
Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp
                               900       905       910
Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr
                               915       920       925
Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
930                               935       940

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<210> 89

<211> 940

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 5 Hexon

<400> 89

```

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1                               5       10       15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20                               25       30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35                               40       45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50                               55       60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                               70       75       80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85                               90       95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
100                              105       110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
115                              120       125
Ala Pro Asn Ser Ser Gln Trp Glu Gln Lys Lys Thr Gly Asn Asn Ala
130                              135       140
Asn Gly Asp Thr Glu Asn Val Thr Tyr Gly Val Ala Ala Met Gly Gly
145                              150       155       160
Ile Asp Ile Asp Lys Asn Gly Leu Gln Ile Gly Thr Asp Asp Thr Lys
165                              170       175
Asp Asp Asp Asn Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro
180                              185       190
Gln Ile Gly Glu Glu Asn Trp Gln Glu Thr Tyr Ser Tyr Tyr Gly Gly
195                              200       205
Arg Ala Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe
210                              215       220
Ala Arg Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Ile Lys Thr Asp
225                              230       235       240
Gly Asp Val Lys Ser Phe Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
245                              250       255
Asn Ser Gly Ala Gly Asn Gly Thr Asn Val Asn Asp Asp Pro Asp Met
260                              265       270

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| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Met | Tyr | Thr | Glu | Asn | Val | Asn | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | 275 | 280 | 285 |
| Val | Tyr | Lys | Pro | Gly | Thr | Ser | Asp | Asp | Ser | Ser | Lys | Val | Asn | Leu | Cys | 290 | 295 | 300 |
| Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | 305 | 310 | 315 |
| Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | 325 | 330 | 335 |
| Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | 340 | 345 | 350 |
| Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | 355 | 360 | 365 |
| Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | 370 | 375 | 380 |
| Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | 385 | 390 | 395 |
| Tyr | Cys | Phe | Pro | Leu | Asp | Gly | Ala | Gly | Thr | Asn | Ser | Val | Tyr | Gln | Gly | 405 | 410 | 415 |
| Val | Lys | Pro | Lys | Thr | Asp | Asn | Gly | Asn | Asp | Gln | Trp | Glu | Thr | Asp | Ser | 420 | 425 | 430 |
| Thr | Val | Ser | Ser | His | Asn | Gln | Ile | Cys | Lys | Gly | Asn | Ile | Tyr | Ala | Met | 435 | 440 | 445 |
| Glu | Ile | Asn | Leu | Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe | Leu | Tyr | Ser | Asn | 450 | 455 | 460 |
| Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile | 465 | 470 | 475 |
| Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | 485 | 490 | 495 |
| Val | Pro | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | 500 | 505 | 510 |
| Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | 515 | 520 | 525 |
| Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | 530 | 535 | 540 |
| Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu | 545 | 550 | 555 |
| Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | 565 | 570 | 575 |
| Val | Asn | Met | Ile | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Thr | Asp | 580 | 585 | 590 |
| Gly | Ala | Ser | Ile | Ser | Phe | Thr | Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe | 595 | 600 | 605 |
| Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | 610 | 615 | 620 |
| Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | 625 | 630 | 635 |
| Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | 645 | 650 | 655 |
| Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys | 660 | 665 | 670 |
| Thr | Arg | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val | 675 | 680 | 685 |
| Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | 690 | 695 | 700 |
| Thr | Phe | Lys | Lys | Val | Ser | Ile | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | 705 | 710 | 715 |
| Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr | 725 | 730 | 735 |
| Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | 740 | 745 | 750 |

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Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly
    755          760          765
Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg
    770          775          780
Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn Tyr Lys
    785          790          795          800
Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe
    805          810          815
Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala
    820          825          830
Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Ala Ser Val Thr
    835          840          845
Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser
    850          855          860
Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met
    865          870          875          880
Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp
    885          890          895
Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp
    900          905          910
Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr
    915          920          925
Leu Arg Thr Pro Phe Ser Ala Gly Lys Ala Thr Thr
    930          935          940

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<210> 90

<211> 940

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 7 Hexon

<400> 90

```

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
  1          5          10          15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
  20          25          30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
  35          40          45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
  50          55          60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
  65          70          75          80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
  85          90          95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
  100          105          110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
  115          120          125
Ala Pro Asn Ser Ser Gln Trp Glu Gln Lys Lys Thr Gly Lys Asn Ala
  130          135          140
Asn Gly Asp Thr Glu Asn Val Thr Tyr Gly Val Ala Ala Met Gly Gly
  145          150          155          160
Ile Asp Ile Asp Lys Asn Gly Leu Gln Ile Gly Thr Asp Asp Thr Lys
  165          170          175
Asp Gly Asp Asn Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro
  180          185          190
Gln Ile Gly Glu Glu Asn Trp Gln Glu Thr Tyr Ser Tyr Tyr Gly Gly
  195          200          205
Arg Ala Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe
  210          215          220
Ala Arg Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Ile Lys Thr Asp
  225          230          235          240

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| | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Gly 301 | Asp 302 | Val 303 | Lys 304 | Ser 245 | Phe 306 | Asp 307 | Ile 308 | Asp 309 | Leu 250 | Ala 311 | Phe 312 | Phe 313 | Asp 314 | Ile 255 | Pro 316 |
| Asn 256 | Ser 257 | Gly 258 | Ala 260 | Gly 261 | Asn 262 | Gly 263 | Thr 264 | Asn 265 | Val 266 | Asn 267 | Asp 268 | Asp 269 | Pro 270 | Asp 271 | Met 272 |
| Val 273 | Met 274 | Tyr 275 | Thr 276 | Glu 277 | Asn 278 | Val 279 | Asn 280 | Leu 281 | Glu 282 | Thr 283 | Pro 284 | Asp 285 | Thr 286 | His 287 | Ile 288 |
| Val 289 | Tyr 290 | Lys 291 | Pro 292 | Gly 293 | Thr 294 | Ser 295 | Asp 296 | Asp 297 | Ser 298 | Ser 299 | Glu 300 | Val 301 | Asn 302 | Leu 303 | Cys 304 |
| Gln 305 | Gln 306 | Ser 307 | Met 308 | Pro 309 | Asn 310 | Arg 311 | Pro 312 | Asn 313 | Tyr 314 | Ile 315 | Gly 316 | Phe 317 | Arg 318 | Asp 319 | Asn 320 |
| Phe 321 | Ile 322 | Gly 323 | Leu 324 | Met 325 | Tyr 326 | Tyr 327 | Asn 328 | Ser 329 | Thr 330 | Gly 331 | Asn 332 | Met 333 | Gly 334 | Val 335 | Leu 336 |
| Ala 337 | Gly 338 | Gln 339 | Ala 340 | Ser 341 | Gln 342 | Leu 343 | Asn 344 | Ala 345 | Val 346 | Val 347 | Asp 348 | Leu 349 | Gln 350 | Asp 351 | Arg 352 |
| Asn 353 | Thr 354 | Glu 355 | Leu 356 | Ser 357 | Tyr 358 | Gln 359 | Leu 360 | Leu 361 | Leu 362 | Asp 363 | Ser 364 | Leu 365 | Gly 366 | Asp 367 | Arg 368 |
| Thr 369 | Arg 370 | Tyr 371 | Phe 372 | Ser 373 | Met 374 | Trp 375 | Asn 376 | Gln 377 | Ala 378 | Val 379 | Asp 380 | Ser 381 | Tyr 382 | Asp 383 | Pro 384 |
| Asp 385 | Val 386 | Arg 387 | Ile 388 | Ile 389 | Glu 390 | Asn 391 | His 392 | Gly 393 | Val 394 | Glu 395 | Asp 396 | Glu 397 | Leu 398 | Pro 399 | Asn 400 |
| Tyr 401 | Cys 402 | Phe 403 | Pro 404 | Leu 405 | Asp 406 | Gly 407 | Ala 408 | Gly 409 | Thr 410 | Asn 411 | Ser 412 | Val 413 | Tyr 414 | Gln 415 | Gly 416 |
| Val 417 | Lys 418 | Pro 419 | Lys 420 | Thr 421 | Asp 422 | Asn 423 | Gly 424 | Asn 425 | Asp 426 | Gln 427 | Trp 428 | Glu 429 | Thr 430 | Asp 431 | Ser 432 |
| Thr 433 | Val 434 | Ser 435 | Ser 436 | His 437 | Asn 438 | Gln 439 | Ile 440 | Cys 441 | Lys 442 | Gly 443 | Asn 444 | Ile 445 | Tyr 446 | Ala 447 | Met 448 |
| Glu 449 | Ile 450 | Asn 451 | Leu 452 | Gln 453 | Ala 454 | Asn 455 | Leu 456 | Trp 457 | Arg 458 | Ser 459 | Phe 460 | Leu 461 | Tyr 462 | Ser 463 | Asn 464 |
| Val 465 | Ala 466 | Leu 467 | Tyr 468 | Leu 469 | Pro 470 | Asp 471 | Ser 472 | Tyr 473 | Lys 474 | Tyr 475 | Thr 476 | Pro 477 | Ala 478 | Asn 479 | Ile 480 |
| Thr 481 | Leu 482 | Pro 483 | Thr 484 | Asn 485 | Thr 486 | Asn 487 | Thr 488 | Tyr 489 | Asp 490 | Tyr 491 | Met 492 | Asn 493 | Gly 494 | Arg 495 | Val 496 |
| Val 497 | Pro 498 | Pro 499 | Ser 500 | Leu 501 | Val 502 | Asp 503 | Ala 504 | Tyr 505 | Ile 506 | Asn 507 | Ile 508 | Gly 509 | Ala 510 | Arg 511 | Trp 512 |
| Ser 513 | Leu 514 | Asp 515 | Pro 516 | Met 517 | Asp 518 | Asn 519 | Val 520 | Asn 521 | Pro 522 | Phe 523 | Asn 524 | His 525 | His 526 | Arg 527 | Asn 528 |
| Ala 529 | Gly 530 | Leu 531 | Arg 532 | Tyr 533 | Arg 534 | Ser 535 | Met 536 | Leu 537 | Leu 538 | Gly 539 | Asn 540 | Gly 541 | Arg 542 | Tyr 543 | Val 544 |
| Pro 545 | Phe 546 | His 547 | Ile 548 | Gln 549 | Val 550 | Pro 551 | Gln 552 | Lys 553 | Phe 554 | Phe 555 | Ala 556 | Ile 557 | Lys 558 | Ser 559 | Leu 560 |
| Leu 561 | Leu 562 | Leu 563 | Pro 564 | Gly 565 | Ser 566 | Tyr 567 | Thr 568 | Tyr 569 | Glu 570 | Trp 571 | Asn 572 | Phe 573 | Arg 574 | Lys 575 | Asp 576 |
| Val 577 | Asn 578 | Met 579 | Ile 580 | Leu 581 | Gln 582 | Ser 583 | Ser 584 | Leu 585 | Gly 586 | Asn 587 | Asp 588 | Leu 589 | Arg 590 | Thr 591 | Asp 592 |
| Gly 593 | Ala 594 | Ser 595 | Ile 596 | Ser 597 | Phe 598 | Thr 599 | Ser 600 | Ile 601 | Asn 602 | Leu 603 | Tyr 604 | Ala 605 | Thr 606 | Phe 607 | Phe 608 |
| Pro 609 | Met 610 | Ala 611 | His 612 | Asn 613 | Thr 614 | Ala 615 | Ser 616 | Thr 617 | Leu 618 | Glu 619 | Ala 620 | Met 621 | Leu 622 | Arg 623 | Asn 624 |
| Asp 625 | Thr 626 | As | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | His | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Phe | Tyr | Val | Pro | Glu | Gly | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Glu | Val | Asn | Tyr | Lys |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Asp | Tyr | Gln | Ala | Val | Thr | Leu | Ala | Tyr | Gln | His | Asn | Asn | Ser | Gly | Phe |
| | | | 805 | | | | | | 810 | | | | | 815 | |
| Val | Gly | Tyr | Leu | Ala | Pro | Thr | Met | Arg | Gln | Gly | Gln | Pro | Tyr | Pro | Ala |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Asn | Tyr | Pro | Tyr | Pro | Leu | Ile | Gly | Lys | Ser | Ala | Val | Thr | Ser | Val | Thr |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Gln | Lys | Lys | Phe | Leu | Cys | Asp | Arg | Val | Met | Trp | Arg | Ile | Pro | Phe | Ser |
| | 850 | | | | | 855 | | | | | 860 | | | | |
| Ser | Asn | Phe | Met | Ser | Met | Gly | Ala | Leu | Thr | Asp | Leu | Gly | Gln | Asn | Met |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| Leu | Tyr | Ala | Asn | Ser | Ala | His | Ala | Leu | Asp | Met | Asn | Phe | Glu | Val | Asp |
| | | | | 885 | | | | | 890 | | | | | 895 | |
| Pro | Met | Asp | Glu | Ser | Thr | Leu | Leu | Tyr | Val | Val | Phe | Glu | Val | Phe | Asp |
| | | | 900 | | | | | 905 | | | | | 910 | | |
| Val | Val | Arg | Val | His | Gln | Pro | His | Arg | Gly | Val | Ile | Glu | Ala | Val | Tyr |
| | | 915 | | | | | 920 | | | | | 925 | | | |
| Leu | Arg | Thr | Pro | Phe | Ser | Ala | Gly | Asn | Ala | Thr | Thr | | | | |
| | 930 | | | | | 935 | | | | | 940 | | | | |

<210> 91

<211> 930

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 9 Hexon

<400> 91

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Thr | Pro | Ser | Met | Leu | Pro | Gln | Trp | Ala | Tyr | Met | His | Ile | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Arg | Ala | Thr | Asp | Thr | Tyr | Phe | Ser | Leu | Gly | Asn | Lys | Phe | Arg | Asn | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu |
| | 50 | | | | 55 | | | | | 60 | | | | | |
| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Thr | Cys | Gln | Trp | Thr | Tyr | Thr | Asp | Asn | Gln | Thr | Glu | Lys |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Thr | Ala | Thr | Tyr | Gly | Asn | Ala | Pro | Val | Glu | Gly | Ile | Asn | Ile | Thr | Lys |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Asp | Gly | Ile | Gln | Leu | Gly | Thr | Asp | Ser | Asp | Gly | Gln | Ala | Ile | Tyr | Ala |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Asp | Glu | Thr | Tyr | Gln | Pro | Glu | Pro | Gln | Val | Gly | Asp | Pro | Glu | Trp | His |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Asp | Thr | Thr | Gly | Thr | Glu | Glu | Lys | Tyr | Gly | Gly | Arg | Ala | Leu | Lys | Pro |
| | | 195 | | | | | 200 | | | | | 205 | | | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Thr | Asp | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Lys | Pro | Thr | Asn | 210 | 215 | 220 |
| Val | Lys | Gly | Gly | Gln | Ala | Lys | Ser | Arg | Thr | Lys | Thr | Asp | Gly | Thr | Thr | 225 | 230 | 235 |
| Glu | Pro | Asp | Ile | Asp | Met | Ala | Phe | Phe | Asp | Gly | Arg | Asn | Ala | Thr | Thr | 245 | 250 | 255 |
| Ala | Gly | Leu | Thr | Pro | Glu | Ile | Val | Leu | Tyr | Thr | Glu | Asn | Val | Asp | Leu | 260 | 265 | 270 |
| Glu | Thr | Pro | Asp | Thr | His | Ile | Val | Tyr | Lys | Ala | Gly | Thr | Asp | Asp | Ser | 275 | 280 | 285 |
| Ser | Ser | Ser | Ile | Asn | Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | 290 | 295 | 300 |
| Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | 305 | 310 | 315 |
| Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | 325 | 330 | 335 |
| Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | 340 | 345 | 350 |
| Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | 355 | 360 | 365 |
| Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | 370 | 375 | 380 |
| Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asn | Ala | Val | Gly | 385 | 390 | 395 |
| Arg | Thr | Asn | Ser | Tyr | Gln | Gly | Ile | Lys | Pro | Asn | Gly | Gly | Asp | Pro | Ala | 405 | 410 | 415 |
| Thr | Trp | Ala | Lys | Asp | Glu | Ser | Val | Asn | Asp | Ser | Asn | Glu | Leu | Gly | Lys | 420 | 425 | 430 |
| Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg | 435 | 440 | 445 |
| Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | 450 | 455 | 460 |
| Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro | Ala | Asn | Thr | Asn | Thr | Tyr | Asp | 465 | 470 | 475 |
| Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | 485 | 490 | 495 |
| Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | 500 | 505 | 510 |
| Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | 515 | 520 | 525 |
| Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | 530 | 535 | 540 |
| Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | 545 | 550 | 555 |
| Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | Met | Ile | Leu | Gln | Ser | Ser | Leu | Gly | 565 | 570 | 575 |
| Asn | Asp | Leu | Arg | Thr | Asp | Gly | Ala | Ser | Ile | Ala | Phe | Thr | Ser | Ile | Asn | 580 | 585 | 590 |
| Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | 595 | 600 | 605 |
| Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | 610 | 615 | 620 |
| Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | 625 | 630 | 635 |
| Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | 645 | 650 | 655 |
| Ser | Phe | Thr | Arg | Leu | Lys | Thr | Arg | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | 660 | 665 | 670 |
| Phe | Asp | Pro | Tyr | Phe | Val | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | 675 | 680 | 685 |


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Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp
 690                               695       700
Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
705                               710       715       720
Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
                               725       730       735
Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr
 740                               745       750
Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg
 755                               760       765
Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
 770                               775       780
Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln
785                               790       795       800
His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln
                               805       810       815
Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser
 820                               825       830
Ala Val Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met
 835                               840       845
Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
 850                               855       860
Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
865                               870       875       880
Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val
                               885       890       895
Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
 900                               905       910
Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
 915                               920       925
Thr Thr
 930

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<210> 92

<211> 930

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 10 Hexon

<400> 92

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
 1                               5       10       15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20                               25       30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
 35                               40       45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50                               55       60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                               70       75       80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85                               90       95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
100                               105       110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
115                               120       125
Ala Pro Asn Thr Cys Gln Trp Thr Tyr Thr Asp Asn Gln Thr Glu Lys
130                               135       140
Thr Ala Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Ser Ile Thr Lys
145                               150       155       160
Asp Gly Ile Gln Leu Gly Thr Asp Thr Asp Asp Gln Pro Ile Tyr Ala
165                               170       175

```

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Lys | Thr | Tyr | Gln | Pro | Glu | Pro | Gln | Val | Gly | Asp | Ala | Glu | Trp | His |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Asp | Ile | Thr | Gly | Thr | Asp | Glu | Lys | Tyr | Gly | Gly | Arg | Ala | Leu | Lys | Pro |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Asp | Thr | Lys | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Lys | Pro | Thr | Asn |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Glu | Gly | Gly | Gln | Ala | Asn | Val | Lys | Thr | Glu | Thr | Gly | Gly | Thr | Lys |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Glu | Tyr | Asp | Ile | Asp | Met | Ala | Phe | Phe | Asp | Asn | Arg | Ser | Ala | Ala | Ala |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Ala | Gly | Leu | Ala | Pro | Glu | Ile | Val | Leu | Tyr | Thr | Glu | Asn | Val | Asp | Leu |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| Glu | Thr | Pro | Asp | Thr | His | Ile | Val | Tyr | Lys | Ala | Gly | Thr | Asp | Asp | Ser |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ser | Ser | Ser | Ile | Asn | Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu |
| | | 340 | | | | | | 345 | | | | | 350 | | |
| Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asn | Ala | Val | Gly |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Arg | Thr | Asp | Thr | Tyr | Gln | Gly | Ile | Lys | Ala | Asn | Gly | Ala | Asp | Gln | Thr |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Thr | Trp | Thr | Lys | Asp | Asp | Thr | Val | Asn | Asp | Ala | Asn | Glu | Leu | Gly | Lys |
| | | 420 | | | | | | 425 | | | | | 430 | | |
| Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro |
| | | 500 | | | | | | 505 | | | | | 510 | | |
| Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | Met | Ile | Leu | Gln | Ser | Ser | Leu | Gly |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Asn | Asp | Leu | Arg | Thr | Asp | Gly | Ala | Ser | Ile | Ala | Phe | Thr | Ser | Ile | Asn |
| | | 580 | | | | | | 585 | | | | | 590 | | |
| Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp |
| | | | 645 | | | | | | 650 | | | | | 655 | |

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Ser Phe Thr Arg Leu Lys Thr Arg Glu Thr Pro Ser Leu Gly Ser Gly
    660                               665                               670
Phe Asp Pro Tyr Phe Val Tyr Ser Glu Ser Ile Pro Tyr Leu Asp Gly
    675                               680                               685
Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp
    690                               695                               700
Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
    705                               710                               715                               720
Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
    725                               730                               735
Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr
    740                               745                               750
Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg
    755                               760                               765
Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
    770                               775                               780
Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln
    785                               790                               795                               800
His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln
    805                               810                               815
Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser
    820                               825                               830
Ala Val Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met
    835                               840                               845
Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
    850                               855                               860
Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
    865                               870                               875                               880
Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val
    885                               890                               895
Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
    900                               905                               910
Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
    915                               920                               925
Thr Thr
    930

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<210> 93

<211> 960

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 11 Hexon

<400> 93

```

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
  1                               5                               10                               15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
  20                               25                               30
Arg Ala Thr Glu Ser Tyr Phe Ser Leu Ser Asn Lys Phe Arg Asn Pro
  35                               40                               45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
  50                               55                               60
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
  65                               70                               75                               80
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
  85                               90                               95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
  100                              105                              110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
  115                              120                              125
Ala Pro Asn Ser Cys Glu Trp Glu Gln Glu Glu Thr Gln Ala Val Glu
  130                              135                              140

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Ala | Ala | Glu | Glu | Glu | Glu | Glu | Asp | Ala | Asp | Gly | Gln | Ala | Glu | Glu |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Glu | Gln | Ala | Ala | Thr | Lys | Lys | Thr | His | Val | Tyr | Ala | Gln | Ala | Pro | Leu |
| | | | | 165 | | | | 170 | | | | | | 175 | |
| Ser | Gly | Glu | Lys | Ile | Ser | Lys | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Thr | Ala | Thr | Glu | Gln | Lys | Pro | Ile | Tyr | Ala | Asp | Pro | Thr | Phe | Gln | Pro |
| | | | 195 | | | | | 200 | | | | 205 | | | |
| Glu | Pro | Gln | Ile | Gly | Glu | Ser | Gln | Trp | Asn | Glu | Ala | Asp | Ala | Thr | Val |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Ala | Gly | Gly | Arg | Val | Leu | Lys | Lys | Thr | Thr | Pro | Met | Lys | Pro | Cys | Tyr |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gly | Ser | Tyr | Ala | Arg | Pro | Thr | Asn | Ala | Asn | Gly | Gly | Gln | Gly | Val | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Ala | Ala | Asn | Ala | Gln | Gly | Gln | Leu | Glu | Ser | Gln | Val | Glu | Met | Gln | Phe |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Phe | Ser | Thr | Ser | Glu | Asn | Ala | Arg | Asn | Glu | Ala | Asn | Asn | Ile | Gln | Pro |
| | | | 275 | | | | 280 | | | | | 285 | | | |
| Lys | Leu | Val | Leu | Tyr | Ser | Glu | Asp | Val | His | Met | Glu | Thr | Pro | Asp | Thr |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| His | Leu | Ser | Tyr | Lys | Pro | Thr | Lys | Ser | Asp | Asp | Asn | Ser | Lys | Val | Met |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Leu | Gly | Gln | Gln | Ala | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Met | Gly |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Thr | Glu | Asp | Glu | Leu |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Gly | Gly | Ile | Gly | Val | Thr | Asp | Thr | Tyr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Gln | Ala | Val | Lys | Thr | Asn | Asn | Gly | Asn | Asn | Gly | Gly | Gln | Val | Thr | Trp |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Thr | Lys | Asp | Glu | Thr | Phe | Ala | Glu | Arg | Asn | Glu | Ile | Gly | Val | Gly | Asn |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Asn | Phe | Ala | Met | Glu | Ile | Asn | Leu | Asn | Ala | Asn | Leu | Trp | Arg | Asn | Phe |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Leu | Tyr | Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Lys | Leu | Lys | Tyr | Asn |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Pro | Ser | Asn | Val | Asp | Ile | Ser | Asp | Asn | Pro | Asn | Thr | Tyr | Asp | Tyr | Met |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Asn | Lys | Arg | Val | Val | Ala | Pro | Gly | Leu | Val | Asp | Cys | Tyr | Ile | Asn | Leu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Gly | Ala | Arg | Trp | Ser | Leu | Asp | Tyr | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Ile | Lys | Asn | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Phe | Arg | Lys | Asp | Val | Asn | Met | Val | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Leu | Arg | Val | Asp | Gly | Ala | Ser | Ile | Lys | Phe | Glu | Ser | Ile | Cys | Leu | Tyr |
| | 610 | | | | | 615 | | | | | 620 | | | | |

```

Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala
625          630          635          640
Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser
          645          650          655
Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro
          660          665          670
Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe
          675          680          685
Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp
690          695          700
Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe
705          710          715          720
Tyr Leu Asn His Thr Phe Lys Lys Val Ser Val Thr Phe Asp Ser Ser
          725          730          735
Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu
          740          745          750
Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn
          755          760          765
Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile
770          775          780
Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr
785          790          795          800
Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Gln
          805          810          815
Thr Lys Tyr Lys Asp Tyr Gln Glu Val Gly Ile Ile His Gln His Asn
          820          825          830
Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln
          835          840          845
Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val
850          855          860
Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg
865          870          875          880
Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu
          885          890          895
Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr
          900          905          910
Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe
915          920          925
Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile
930          935          940
Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945          950          955          960

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<210> 94

<211> 944

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 16 Hexon

<400> 94

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
          20          25          30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
          35          40          45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50          55          60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65          70          75          80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
          85          90          95

```

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Ser | Ser | Gln | Trp | Glu | Gln | Thr | Glu | Asn | Gly | Gly | Gly | Gln |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Ala | Thr | Thr | Lys | Thr | His | Thr | Tyr | Gly | Val | Ala | Pro | Met | Gly | Gly | Thr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Asn | Ile | Thr | Val | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala | Thr | Ala | Asp |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Thr | Glu | Lys | Pro | Ile | Tyr | Ala | Asp | Lys | Thr | Phe | Gln | Pro | Glu | Pro | Gln |
| | | 180 | | | | | | 185 | | | | | 190 | | |
| Ile | Gly | Glu | Glu | Asn | Trp | Gln | Glu | Thr | Glu | Ser | Phe | Tyr | Gly | Gly | Arg |
| | 195 | | | | | 200 | | | | | | 205 | | | |
| Ala | Leu | Lys | Lys | Asp | Thr | Asn | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Arg | Pro | Thr | Asn | Glu | Lys | Gly | Gly | Gln | Ala | Lys | Leu | Lys | Val | Gly | Ala |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Asp | Gly | Leu | Pro | Thr | Lys | Glu | Phe | Asp | Ile | Asp | Leu | Ala | Phe | Phe | Asp |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Thr | Pro | Gly | Gly | Thr | Val | Thr | Gly | Gly | Thr | Glu | Glu | Tyr | Lys | Ala | Asp |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| Ile | Val | Met | Tyr | Thr | Glu | Asn | Thr | Tyr | Leu | Glu | Thr | Pro | Asp | Thr | His |
| | 275 | | | | | 280 | | | | | | 285 | | | |
| Val | Val | Tyr | Lys | Pro | Gly | Lys | Asp | Asn | Thr | Ser | Ser | Lys | Ile | Asn | Leu |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Val | Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp |
| | | 340 | | | | | | 345 | | | | | 350 | | |
| Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp |
| | 355 | | | | | | 360 | | | | | 365 | | | |
| Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Asn | Tyr | Cys | Phe | Pro | Leu | Asp | Gly | Ser | Gly | Thr | Asn | Ala | Ala | Tyr | Gln |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Gly | Val | Lys | Val | Lys | Asn | Gly | Gln | Asp | Gly | Asp | Val | Glu | Ser | Glu | Trp |
| | | 420 | | | | | | 425 | | | | | 430 | | |
| Glu | Lys | Asp | Asp | Thr | Val | Ala | Ala | Arg | Asn | Gln | Leu | Cys | Lys | Gly | Asn |
| | | 435 | | | | 440 | | | | | | 445 | | | |
| Ile | Phe | Ala | Met | Glu | Ile | Asn | Leu | Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Leu | Tyr | Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Pro | Ala | Asn | Ile | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Asn | Gly | Arg | Val | Val | Pro | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Ile | Lys | Ser | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn |
| | | | 565 | | | | | | 570 | | | | | 575 | |

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Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp
580 585 590
Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr
595 600 605
Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala
610 615 620
Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser
625 630 635 640
Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro
645 650 655
Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe
660 665 670
Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp
675 680 685
Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe
690 695 700
Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser
705 710 715 720
Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu
725 730 735
Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn
740 745 750
Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile
755 760 765
Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr
770 775 780
Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu
785 790 795 800
Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn
805 810 815
Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln
820 825 830
Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val
835 840 845
Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg
850 855 860
Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu
865 870 875 880
Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn
885 890 895
Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe
900 905 910
Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile
915 920 925
Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
930 935 940

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<210> 95

<211> 960

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 17 Hexon

<400> 95

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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30
Arg Ala Thr Glu Ser Tyr Phe Ser Leu Ser Asn Lys Phe Arg Asn Pro
35 40 45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Arg | Phe | Ile | Pro | Val | Asp | Arg | Glu | Asp | Thr | Ala | Tyr | Ser | Tyr |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Lys | Ala | Arg | Phe | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Thr |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | | 115 | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Ser | Cys | Glu | Trp | Glu | Gln | Glu | Glu | Thr | Gln | Ala | Val | Glu |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Glu | Ala | Ala | Glu | Glu | Glu | Glu | Asp | Ala | Asp | Gly | Gln | Ala | Glu | Glu | |
| 145 | | | | | 150 | | | | 155 | | | | | | 160 |
| Glu | Gln | Ala | Ala | Thr | Lys | Lys | Thr | His | Val | Tyr | Ala | Gln | Ala | Pro | Leu |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Ser | Gly | Glu | Lys | Ile | Ser | Lys | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala |
| | | | 180 | | | | | 185 | | | | 190 | | | |
| Thr | Ala | Thr | Glu | Gln | Lys | Pro | Ile | Tyr | Ala | Asp | Pro | Thr | Phe | Gln | Pro |
| | | | 195 | | | | 200 | | | | | 205 | | | |
| Glu | Pro | Gln | Ile | Gly | Glu | Ser | Gln | Trp | Asn | Glu | Ala | Asp | Ala | Thr | Val |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Ala | Gly | Gly | Arg | Val | Leu | Lys | Lys | Ser | Thr | Pro | Met | Lys | Pro | Cys | Tyr |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gly | Ser | Tyr | Ala | Arg | Pro | Thr | Asn | Ala | Asn | Gly | Gly | Gln | Gly | Val | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Thr | Ala | Asn | Ala | Gln | Gly | Gln | Leu | Glu | Ser | Gln | Val | Glu | Met | Gln | Phe |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Phe | Ser | Thr | Ser | Glu | Asn | Ala | Arg | Asn | Glu | Thr | Asn | Asn | Ile | Gln | Pro |
| | | | 275 | | | | 280 | | | | | 285 | | | |
| Lys | Leu | Val | Leu | Tyr | Ser | Glu | Asp | Val | His | Met | Glu | Thr | Pro | Asp | Thr |
| | 290 | | | | 295 | | | | | 300 | | | | | |
| His | Leu | Ser | Tyr | Lys | Pro | Ala | Lys | Ser | Asp | Asp | Asn | Ser | Lys | Ile | Met |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Met | Gly |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Thr | Glu | Asp | Glu | Leu |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Gly | Gly | Ile | Gly | Val | Thr | Asp | Thr | Tyr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Gln | Ala | Val | Lys | Thr | Asn | Asn | Gly | Asn | Asn | Gly | Gly | Gln | Val | Thr | Trp |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Thr | Lys | Asp | Glu | Thr | Phe | Ala | Asp | Arg | Asn | Glu | Ile | Gly | Val | Gly | Asn |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Asn | Phe | Ala | Met | Glu | Ile | Asn | Leu | Ser | Ala | Asn | Leu | Trp | Arg | Asn | Phe |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Leu | Tyr | Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Lys | Leu | Lys | Tyr | Asn |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Pro | Ser | Asn | Val | Asp | Ile | Ser | Asp | Asn | Pro | Asn | Thr | Tyr | Asp | Tyr | Met |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Asn | Lys | Arg | Val | Val | Ala | Pro | Gly | Leu | Val | Asp | Cys | Tyr | Ile | Asn | Leu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Gly | Ala | Arg | Trp | Ser | Leu | Asp | Tyr | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn |
| | 530 | | | | | 535 | | | | | 540 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala |
| | | | | 565 | | | | | 570 | | | | | | 575 |
| Ile | Lys | Asn | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Phe | Arg | Lys | Asp | Val | Asn | Met | Val | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Leu | Arg | Val | Asp | Gly | Ala | Ser | Ile | Lys | Phe | Glu | Ser | Ile | Cys | Leu | Tyr |
| 610 | | | | | | 615 | | | | | 620 | | | | |
| Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser |
| | | | 645 | | | | | | 650 | | | | | 655 | |
| Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ala | Phe |
| | 675 | | | | | | 680 | | | | | 685 | | | |
| Thr | Arg | Leu | Lys | Thr | Lys | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Pro | Tyr | Tyr | Thr | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Tyr | Leu | Asn | His | Thr | Phe | Lys | Lys | Val | Ser | Val | Thr | Phe | Asp | Ser | Ser |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Val | Ser | Trp | Pro | Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Ile | Lys | Arg | Ser | Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn |
| | 755 | | | | | | 760 | | | | | 765 | | | |
| Met | Thr | Lys | Asp | Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | Asn | Tyr | Asn | Ile |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Gly | Tyr | Gln | Gly | Phe | Tyr | Ile | Pro | Glu | Ser | Tyr | Lys | Asp | Arg | Met | Tyr |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Ser | Phe | Phe | Arg | Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Gln |
| | | | 805 | | | | | | 810 | | | | | 815 | |
| Thr | Lys | Tyr | Lys | Asp | Tyr | Gln | Glu | Val | Gly | Ile | Ile | His | Gln | His | Asn |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Asn | Ser | Gly | Phe | Val | Gly | Tyr | Leu | Ala | Pro | Thr | Met | Arg | Glu | Gly | Gln |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Ala | Tyr | Pro | Ala | Asn | Phe | Pro | Tyr | Pro | Leu | Ile | Gly | Lys | Thr | Ala | Val |
| | 850 | | | | | | 855 | | | | 860 | | | | |
| Asp | Ser | Ile | Thr | Gln | Lys | Lys | Phe | Leu | Cys | Asp | Arg | Thr | Leu | Trp | Arg |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| Ile | Pro | Phe | Ser | Ser | Asn | Phe | Met | Ser | Met | Gly | Ala | Leu | Ser | Asp | Leu |
| | | | 885 | | | | | | 890 | | | | | 895 | |
| Gly | Gln | Asn | Leu | Leu | Tyr | Ala | Asn | Ser | Ala | His | Ala | Leu | Asp | Met | Thr |
| | | | 900 | | | | | 905 | | | | | 910 | | |
| Phe | Glu | Val | Asp | Pro | Met | Asp | Glu | Pro | Thr | Leu | Leu | Tyr | Val | Leu | Phe |
| | | 915 | | | | | 920 | | | | | 925 | | | |
| Glu | Val | Phe | Asp | Val | Val | Arg | Val | His | Gln | Pro | His | Arg | Gly | Val | Ile |
| | 930 | | | | | 935 | | | | | 940 | | | | |
| Glu | Thr | Val | Tyr | Leu | Arg | Thr | Pro | Phe | Ser | Ala | Gly | Asn | Ala | Thr | Thr |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 |

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<211> 958

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 19 Hexon

<400> 96

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Thr | Pro | Ser | Met | Met | Pro | Gln | Trp | Ser | Tyr | Met | His | Ile | Ser |
| 1 | | | | | 5 | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
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| Thr | Gln | Ala | Ala | Ala | Gly | Asn | Ser | Asp | Asn | Pro | Thr | Pro | Lys | Leu | Val | |
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| Leu | Tyr | Ser | Glu | Asp | Val | Asn | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Ser | |
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| Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | |
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| Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Thr | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | |
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| Ser | Asp | Lys | Asn | Glu | Ile | Arg | Val | Gly | Asn | Asn | Phe | Ala | Met | Glu | Ile | |
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| Leu | Tyr | Leu | Pro | Asp | Lys | Leu | Lys | Tyr | Thr | Pro | Ser | Asn | Val | Gln | Ile | |
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| | | 515 | | | | | 520 | | | | | 525 | | | | |
| Asp | Tyr | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | |
| | 530 | | | | | 535 | | | | 540 | | | | | | |
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| His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Asn | Leu | Leu | Leu | |
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| Lys | Lys | Val | Ser | Val | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | Gly | Asn | |
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| Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Ser | Val | Asp | |
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| Leu | Val | Gln | Met | Leu | Ala | Asn | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | Phe | Tyr | |
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| Ile | Pro | Glu | Ser | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | Asn | Phe | |
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| Tyr | Leu | Ala | Pro | Thr | Met | Arg | Glu | Gly | Gln | Ala | Tyr | Pro | Ala | Asn | Phe | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
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| Lys | Phe | Leu | Cys | Asp | Arg | Thr | Leu | Trp | Arg | Ile | Pro | Phe | Ser | Ser | Asn | |
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| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly | |
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| Lys | Thr | Asp | Asn | Lys | Glu | Ile | Tyr | Ala | Asp | Lys | Thr | Tyr | Gln | Pro | Glu | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
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| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly | |
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| Thr | Thr | Gly | Asp | Lys | Pro | Ile | Tyr | Ala | Asp | Lys | Thr | Phe | Gln | Pro | Glu | |
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| Lys | Phe | Gly | Gly | Arg | Thr | Leu | Lys | Ser | Ala | Thr | Asn | Met | Lys | Pro | Cys | |
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| Tyr | Gly | Ser | Phe | Ala | Arg | Pro | Thr | Asn | Lys | Gln | Gly | Gly | Gln | Ala | Lys | |
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| Asp | Asp | Lys | Gly | Val | Leu | Gln | Ser | Lys | Val | Glu | Leu | Gln | Phe | Phe | Ser | |
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| Ile | Ser | Tyr | Lys | Pro | Thr | Lys | Ser | Asp | Asp | Asn | Ser | Lys | Ile | Met | Leu | |
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| Gln | Gly | Phe | Tyr | Ile | Pro | Glu | Ser | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe |
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| Lys | Leu | Tyr | Gln | Pro | Glu | Pro | Gln | Ile | Gly | Asp | Glu | Gln | Trp | His | Asp | |
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| Thr | Thr | Gly | Thr | Asn | Glu | Gln | Tyr | Gly | Gly | Arg | Ala | Leu | Lys | Pro | Ala | |
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| Thr | Asn | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Arg | Pro | Thr | Asn | Lys | |
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| Lys | Gly | Gly | Gln | Ala | Lys | Thr | Arg | Lys | Ile | Glu | Lys | Glu | Glu | Asn | Gly | |
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| Val | Lys | Thr | Val | Thr | Glu | Glu | Ala | Asp | Ile | Asp | Met | Asp | Phe | Tyr | Asp | |
| | | 260 | | | | | | 265 | | | | | 270 | | | |
| Leu | Arg | Ser | Gln | Arg | Ala | Asn | Phe | Asp | Pro | Lys | Ile | Val | Leu | Tyr | Ser | |
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| Glu | Asn | Val | Asn | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Val | Tyr | Lys | Pro | |
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| Gly | Thr | Asp | Glu | Thr | Ser | Ser | Ser | Val | Asn | Leu | Gly | Gln | Gln | Ala | Met | |
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| Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| Met | Phe | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | |
| | | 340 | | | | | | 345 | | | | | 350 | | | |
| Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | |
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| Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | |
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| Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | |
| | | | 405 | | | | | | 410 | | | | | 415 | | |
| Leu | Asp | Gly | Val | Gly | Pro | Ile | Thr | Gly | Thr | Tyr | Gln | Gly | Val | Glu | Pro | |
| | | 420 | | | | | | 425 | | | | | 430 | | | |
| Asp | Gly | Asn | Asn | Gly | Asn | Trp | Lys | Lys | Asn | Thr | Asn | Ile | Asn | Gly | Ala | |
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| Asn | Glu | Ile | Gly | Lys | Gly | Asn | Asn | Tyr | Ala | Met | Glu | Ile | Asn | Leu | Gln | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
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| Pro | Asp | Gly | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Val | Thr | Leu | Pro | Glu | Asn | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |

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Lys Asn Thr Tyr Gly Tyr Ile Asn Gly Arg Val Val Ser Pro Ser Leu
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Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln
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Val Pro Gln Lys Ile Phe Ala Val Lys Asn Leu Leu Leu Leu Pro Gly
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Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu
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Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro
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Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile
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Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val
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Ser Ile Met Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu
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Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly
740 745 750
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785 790 795 800
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Cys Asp Arg Thr Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser
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Thr Leu Leu Tyr Leu Leu Phe Glu Val Phe Asp Val Val Arg Val His
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<211> 2817

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 38 Hexon

<400> 111

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<210> 112

<211> 938

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 38 Hexon

<400> 112

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
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| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Arg | Ala | Thr | Asp | Thr | Tyr | Phe | Ser | Leu | Gly | Asn | Lys | Phe | Arg | Asn | Pro | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu | |
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| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ala | Leu | Ala | Pro | Lys | Ala | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| Ala | Pro | Asn | Pro | Ser | Gln | Trp | Glu | Glu | Thr | Thr | Thr | Gly | Thr | Asp | Gly | |
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| Asn | Ala | Ala | Thr | Thr | Thr | Thr | His | Ser | Phe | Gly | Leu | Ala | Ala | Met | Lys | |
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| Gly | Asp | Asn | Ile | Thr | Ser | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala | Thr | |
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| Ser | Gly | Glu | Glu | Lys | Pro | Ile | Tyr | Ala | Asp | Lys | Leu | Tyr | Gln | Pro | Glu | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Pro | Gln | Ile | Gly | Glu | Glu | Ser | Trp | Thr | Asp | Thr | Asp | Gly | Thr | Asn | Glu | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| Lys | Phe | Gly | Gly | Arg | Val | Leu | Lys | Lys | Asp | Thr | Ser | Met | Lys | Pro | Cys | |
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| Gln | Lys | Ala | Thr | Glu | Gly | Thr | Ala | Val | Glu | Tyr | Asp | Val | Asp | Met | Asn | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| Phe | Phe | Asp | Gly | Arg | Asp | Ala | Ala | Ala | Asn | Phe | Thr | Pro | Glu | Val | Val | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| Leu | Tyr | Ala | Glu | Asn | Val | Asp | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Val | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| Tyr | Lys | Pro | Gly | Thr | Ser | Asp | Val | Ser | Ser | His | Val | Asn | Leu | Gly | Gln | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| Gln | Ala | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | |
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| Ile | Gly | Leu | Met | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | | |
| | | | | 325 | | | | 330 | | | | | 335 | | | |
| Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
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| Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
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| | | | 420 | | | | | 425 | | | | | 430 | | | |
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| | | 435 | | | | | 440 | | | | | 445 | | | | |
| Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | |
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| Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Val | Thr | Leu | |
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| Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | |
| | | | | 485 | | | | | 490 | | | | | | 495 | |

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Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe
      530      535      540
His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu
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Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn
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Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala
      580      585      590
Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met
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Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr
      610      615      620
Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr
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Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg
      645      650      655
Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys
      660      665      670
Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser
      675      680      685
Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe
      690      695      700
Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn
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Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp
      725      730      735
Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe
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Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr
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Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys
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<211> 2781

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 44 Hexon

<400> 113

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gtcgacccca tggatgagtc cacccttctc tatgttgtct tcgaagtctt cgacgtcgtc 2700
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<210> 114

<211> 926

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 44 Hexon

<400> 114

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1           5           10          15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20           25           30

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Ala | Thr | Asp | Thr | Tyr | Phe | Ser | Leu | Gly | Asn | Lys | Phe | Arg | Asn | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Pro | Ser | Gln | Trp | Glu | Gln | Thr | Glu | Thr | Asn | Val | Asn | Lys |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Thr | His | Thr | Phe | Gly | Met | Ala | Ala | Met | Lys | Gly | Glu | Ala | Ile | Asp | Lys |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Asn | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala | Ala | Asp | Gln | Asp | Lys | Pro | Ile |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Tyr | Ala | Asp | Lys | Thr | Phe | Gln | Pro | Glu | Pro | Gln | Val | Gly | Glu | Glu | Asp |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Trp | Ile | Asp | Lys | Ala | Asp | Phe | Tyr | Gly | Gly | Arg | Ala | Leu | Lys | Lys | Asp |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Thr | Lys | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Lys | Pro | Thr | Asn | Val |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Gly | Gly | Gln | Ala | Thr | Pro | Arg | Thr | Lys | Ala | Asp | Gly | Thr | Thr | Glu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Pro | Asp | Ile | Asp | Met | Asn | Phe | Phe | Asp | Pro | Thr | Thr | Ile | Asn | Thr | Pro |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Asp | Val | Val | Leu | Tyr | Ala | Glu | Asn | Val | Asp | Leu | Gln | Thr | Pro | Asp | Thr |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| His | Ile | Val | Tyr | Lys | Ala | Gly | Thr | Ser | Asp | Asp | Ser | Ser | Glu | Val | Asn |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Leu | Ala | Gln | Gln | Ala | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg |
| | 290 | | | | 295 | | | | | | 300 | | | | |
| Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asp | Gly | Val | Gly | Thr | Asn | Thr | Ala | Tyr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Gln | Gly | Val | Lys | Val | Lys | Thr | Thr | Asn | Gly | Asn | Asp | Thr | Trp | Glu | Lys |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asp | Glu | Thr | Val | Tyr | Glu | Phe | Asn | Gln | Ile | Gly | Lys | Gly | Asp | Ile | Tyr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe | Leu | Tyr |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Asn | Val | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Arg | Val | Val | Pro | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His |
| | | | 500 | | | | | 505 | | | | | 510 | | |

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Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg
    515          520          525
Phe Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys
    530          535          540
Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg
545          550          555          560
Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg
    565          570          575
Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr
    580          585          590
Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu
    595          600          605
Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala
    610          615          620
Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser
625          630          635          640
Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg
    645          650          655
Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr
    660          665          670
Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu
    675          680          685
Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser
    690          695          700
Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys
705          710          715          720
Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr
    725          730          735
Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr
    740          745          750
Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe
    755          760          765
Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn
    770          775          780
Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser
785          790          795          800
Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr
    805          810          815
Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser
    820          825          830
Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro
    835          840          845
Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln
    850          855          860
Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu
865          870          875          880
Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val
    885          890          895
Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala
    900          905          910
Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    915          920          925

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<210> 115

<211> 2877

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 63 Hexon

<400> 115

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<210> 116

<211> 941

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 63 Hexon

<400> 116

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1          5          10          15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20          25          30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35          40          45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50          55          60

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| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr | 65 | 70 | 75 | 80 |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met | 85 | 90 | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser | 100 | 105 | 110 | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly | 115 | 120 | 125 | |
| Ala | Pro | Asn | Thr | Ser | Gln | Trp | Lys | Asp | Ser | Asp | Ser | Lys | Met | His | Thr | 130 | 135 | 140 | |
| Phe | Gly | Val | Ala | Ala | Met | Pro | Gly | Val | Val | Gly | Lys | Lys | Ile | Glu | Ala | 145 | 150 | 155 | 160 |
| Asp | Gly | Leu | Pro | Ile | Gly | Ile | Asp | Ser | Ser | Ser | Gly | Thr | Asp | Thr | Ile | 165 | 170 | 175 | |
| Ile | Tyr | Ala | Asp | Lys | Thr | Phe | Gln | Pro | Glu | Pro | Gln | Val | Gly | Ser | Asp | 180 | 185 | 190 | |
| Ser | Trp | Val | Asp | Thr | Asn | Gly | Ala | Glu | Glu | Lys | Tyr | Gly | Gly | Arg | Ala | 195 | 200 | 205 | |
| Leu | Lys | Asp | Thr | Thr | Asn | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Arg | 210 | 215 | 220 | |
| Pro | Thr | Asn | Lys | Glu | Gly | Gln | Ala | Asn | Ile | Lys | Asp | Ser | Glu | Thr | | 225 | 230 | 235 | 240 |
| Ala | Ser | Thr | Thr | Pro | Asn | Tyr | Asp | Ile | Asp | Leu | Ala | Phe | Phe | Asp | Ser | 245 | 250 | 255 | |
| Lys | Asn | Ile | Ala | Ala | Asn | Tyr | Asp | Pro | Asp | Ile | Val | Met | Tyr | Thr | Glu | 260 | 265 | 270 | |
| Asn | Val | Glu | Leu | Gln | Thr | Pro | Asp | Thr | His | Ile | Val | Phe | Lys | Pro | Gly | 275 | 280 | 285 | |
| Thr | Ser | Asp | Glu | Ser | Ser | Glu | Ala | Asn | Leu | Gly | Gln | Gln | Ala | Met | Pro | 290 | 295 | 300 | |
| Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | 305 | 310 | 315 | 320 |
| Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | 325 | 330 | 335 | |
| Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | 340 | 345 | 350 | |
| Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | 355 | 360 | 365 | |
| Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | 370 | 375 | 380 | |
| Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | 385 | 390 | 395 | 400 |
| Asn | Gly | Val | Gly | Phe | Thr | Asp | Thr | Tyr | Gln | Gly | Val | Lys | Val | Lys | Thr | 405 | 410 | 415 | |
| Asp | Thr | Ala | Ala | Thr | Gly | Thr | Asn | Gly | Thr | Gln | Trp | Asp | Lys | Asp | Asp | 420 | 425 | 430 | |
| Thr | Thr | Val | Ser | Thr | Ala | Asn | Glu | Ile | His | Ser | Gly | Asn | Pro | Phe | Ala | 435 | 440 | 445 | |
| Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ala | 450 | 455 | 460 | |
| Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | 465 | 470 | 475 | 480 |
| Ile | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | 485 | 490 | 495 | |
| Val | Val | Ala | Pro | Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | 500 | 505 | 510 | |
| Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | 515 | 520 | 525 | |
| Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | 530 | 535 | 540 | |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | 545 | 550 | 555 | 560 |
| Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | 565 | 570 | 575 | |
| Asp | Val | Asn | Met | Ile | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Thr | 580 | 585 | 590 | |
| Asp | Gly | Ala | Ser | Ile | Ala | Phe | Thr | Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | 595 | 600 | 605 | |
| Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | 610 | 615 | 620 | |
| Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | 625 | 630 | 635 | 640 |
| Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | 645 | 650 | 655 | |
| Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | 660 | 665 | 670 | |
| Lys | Thr | Arg | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | 675 | 680 | 685 | |
| Val | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | 690 | 695 | 700 | |
| His | Thr | Phe | Lys | Lys | Val | Ser | Ile | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | 705 | 710 | 715 | 720 |
| Pro | Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | 725 | 730 | 735 | |
| Thr | Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | 740 | 745 | 750 | |
| Asp | Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | His | Tyr | Asn | Ile | Gly | Tyr | Gln | 755 | 760 | 765 | |
| Gly | Phe | Tyr | Val | Pro | Glu | Gly | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | 770 | 775 | 780 | |
| Arg | Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Glu | Val | Asn | Tyr | 785 | 790 | 795 | 800 |
| Lys | Asp | Tyr | Gln | Ala | Val | Thr | Leu | Ala | Tyr | Gln | His | Asn | Asn | Ser | Gly | 805 | 810 | 815 | |
| Phe | Val | Gly | Tyr | Leu | Ala | Pro | Thr | Met | Arg | Gln | Gly | Gln | Pro | Tyr | Pro | 820 | 825 | 830 | |
| Ala | Asn | Tyr | Pro | Tyr | Pro | Leu | Ile | Gly | Lys | Ser | Ala | Val | Ala | Ser | Val | 835 | 840 | 845 | |
| Thr | Gln | Lys | Lys | Phe | Leu | Cys | Asp | Arg | Val | Met | Trp | Arg | Ile | Pro | Phe | 850 | 855 | 860 | |
| Ser | Ser | Asn | Phe | Met | Ser | Met | Gly | Ala | Leu | Thr | Asp | Leu | Gly | Gln | Asn | 865 | 870 | 875 | 880 |
| Met | Leu | Tyr | Ala | Asn | Ser | Ala | His | Ala | Leu | Asp | Met | Asn | Phe | Glu | Val | 885 | 890 | 895 | |
| Asp | Pro | Met | Asp | Glu | Ser | Thr | Leu | Leu | Tyr | Val | Val | Phe | Glu | Val | Phe | 900 | 905 | 910 | |
| Asp | Val | Val | Arg | Val | His | Gln | Pro | His | Arg | Gly | Val | Ile | Glu | Ala | Val | 915 | 920 | 925 | |
| Tyr | Leu | Arg | Thr | Pro | Phe | Ser | Ala | Gly | Asn | Ala | Thr | Thr | | | | 930 | 935 | 940 | |

<210> 117

<211> 2811

<212> DNA

<213> Chimpanzee Adenovirus- ChAd 82 Hexon

<400> 117

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ctggggaaca agtttaggaa cccacgggtg gcgcccacgc acgatgtgac caccgaccgc 180
agccagcggc tgacgctgcg cttcgtgccc gtggaccgcg aggacaacac ctactcgtac 240

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tcatttgcca gacctaccaa tgtgaaggga gggcaagcca aagtgaaaac agaagaaaat 720
gttcagtcac ttgacataga tctggctttc tttgatattc caagcaccgg cacagggggc 780
aatggtacaa atgtaaataa taagccagac atggttatgt acactgaaaa tgtgaatctg 840
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aacttgtgcc agcaggccat gccaaacaga ccaactaca ttggtttcag agacaacttt 960
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cttgactctc tgggtgacag aaccgggtat ttcagcatgt ggaaccaggc ggtggacagt 1140
tatgaccctg atgtgcgcat tattgaaaac catggtgtgg aggatgaatt gccaaactat 1200
tgcttcccct tggatggagc tggcactaat gctgtatacc ggggtgttaa agcaaaagat 1260
aacggaaact gggaacaaga cacaggcggt tcaagtatta accagatatg caaggggaac 1320
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gtggccctgt acctgcccga ctcttacaag tacacgccgg ccaacatcac cctgcccacc 1440
aacaccaaca cctacgatta catgaacggt cgggtggtgc ctccctcgct ggtggacgac 1500
tacctcaaca tcggggcgcg ctggtcgctg gaccccatgg acaacgtcaa tcccttcaac 1560
caccaccgca acgcgggcct gcgctacgcg tccatgctcc tgggcaacgg gcgctacgtg 1620
cccttccaca tccaggtgcc ccagaaattt ttcccatca agagcctcct gctcctgcc 1680
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gacaccaacg accagtcctt caacgactac ctctcgcgcg ccaacatgct ctaccccatc 1920
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ggctggtcct tcacgcgtct caagaccaag gagacgcctt cgtgggctc cgggttcgac 2040
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accttcaaga aggtctccat caccttcgac tccctcgta gctggcccg caacgaccgg 2160
ctcctgacgc ccaacgagtt cgaaatcaag cgcaccgtcg acggcgaggg ctacaacgtg 2220
gcccagtgca acatgaccaa ggactggttc ctggtccaga tgctggccca ctacaacatc 2280
ggctaccagg gcttctacgt gcccaggggc tacaaggacc gcatgtactc cttcttccgc 2340
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gtcacccctg cctaccagca caacaactcg ggcttcgtcg gctacctcgc gccaccatg 2460
cgccaggggc agccctaccc cgccaactac ccgtacccgc tcatcggcaa gagcgccgtc 2520
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tccgcccacg cgctagacat gaatttcgaa gtcgacccca tggatgagtc cacccttctc 2700
tatgttgtct tcgaagtctt cgacgtcgtc cgagtgcacc agccccaccg cggcgctcatc 2760
gaggccgtct acctgcgcac acccttctcg gccggtaacg ccaccaccta a 2811

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<210> 118

<211> 936

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 82 Hexon

<400> 118

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
 1           5           10          15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20          25          30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
 35          40          45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50          55          60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65          70          75          80

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Ser | Ser | Gln | Trp | Glu | Gln | Asn | Glu | Asn | Asn | Gly | Gln | Gly |
| | | 130 | | | | 135 | | | | | 140 | | | | |
| Gln | Ala | Lys | Thr | His | Thr | Tyr | Gly | Val | Ala | Ala | Met | Gly | Gly | Leu | Asp |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ile | Thr | Lys | Glu | Gly | Leu | Lys | Ile | Val | Thr | Asp | Ala | Ser | Lys | Glu | Asp |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Asp | Asn | Glu | Ile | Tyr | Ala | Asp | Lys | Thr | Tyr | Gln | Pro | Glu | Pro | Gln | Ile |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Gly | Glu | Glu | Asn | Trp | Gln | Asp | Thr | Lys | Asn | Phe | Tyr | Gly | Gly | Arg | Ala |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Leu | Lys | Lys | Asp | Thr | Lys | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Arg |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Pro | Thr | Asn | Val | Lys | Gly | Gly | Gln | Ala | Lys | Val | Lys | Thr | Glu | Glu | Asn |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Val | Gln | Ser | Phe | Asp | Ile | Asp | Leu | Ala | Phe | Phe | Asp | Ile | Pro | Ser | Thr |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Gly | Thr | Gly | Gly | Asn | Gly | Thr | Asn | Val | Asn | Asp | Lys | Pro | Asp | Met | Val |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Met | Tyr | Thr | Glu | Asn | Val | Asn | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Val |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Tyr | Lys | Pro | Gly | Thr | Ser | Asp | Asp | Ser | Ser | Glu | Ala | Asn | Leu | Cys | Gln |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Gln | Ala | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ile | Gly | Leu | Met | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | |
| | | | 325 | | | | | 330 | | | | | 335 | | |
| Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn |
| | | 340 | | | | | | 345 | | | | | 350 | | |
| Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Cys | Phe | Pro | Leu | Asp | Gly | Ala | Gly | Thr | Asn | Ala | Val | Tyr | Arg | Gly | Val |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Lys | Ala | Lys | Asp | Asn | Gly | Asn | Trp | Glu | Gln | Asp | Thr | Gly | Val | Ser | Ser |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Ile | Asn | Gln | Ile | Cys | Lys | Gly | Asn | Ile | Tyr | Ala | Met | Glu | Ile | Asn | Ile |
| | 435 | | | | | | 440 | | | | | 445 | | | |
| Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe | Leu | Tyr | Ser | Asn | Val | Ala | Leu | Tyr |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro | Thr |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Pro | Pro | Ser |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg |
| | 515 | | | | | | 520 | | | | | 525 | | | |
| Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His | Ile |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Leu | Pro |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |

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Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile
                    565                    570                    575
Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile
                    580                    585                    590
Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His
                    595                    600                    605
Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp
                    610                    615                    620
Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile
625                    630                    635                    640
Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp
                    645                    650                    655
Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr
                    660                    665                    670
Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser
                    675                    680                    685
Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys
690                    695                    700
Val Ser Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg
705                    710                    715                    720
Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu
                    725                    730                    735
Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val
                    740                    745                    750
Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro
                    755                    760                    765
Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro
770                    775                    780
Met Ser Arg Gln Val Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala
785                    790                    795                    800
Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu
                    805                    810                    815
Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr
                    820                    825                    830
Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe
                    835                    840                    845
Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met
850                    855                    860
Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn
865                    870                    875                    880
Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu
                    885                    890                    895
Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg Val
900                    905                    910
His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro
915                    920                    925
Phe Ser Ala Gly Asn Ala Thr
930                    935

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<210> 119

<211> 933

<212> PRT

<213> Chimpanzee Adenovirus- CV23 Pan5 Hexon

<400> 119

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1                    5                    10                    15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20                    25                    30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35                    40                    45

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu |
| 50 | | | | | | 55 | | | | | 60 | | | | |
| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser |
| | | | | 100 | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ala | Pro | Asn | Thr | Cys | Gln | Trp | Thr | Tyr | Lys | Ala | Asp | Gly | Asp | Thr | Gly |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Thr | Glu | Lys | Thr | Tyr | Thr | Gly | Asn | Ala | Pro | Val | Gln | Gly | Ile | Ser | |
| 145 | | | | | 150 | | | | 155 | | | | | 160 | |
| Ile | Thr | Lys | Asp | Gly | Ile | Gln | Leu | Gly | Thr | Asp | Thr | Asp | Asp | Gln | Pro |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Ile | Tyr | Ala | Asp | Lys | Thr | Tyr | Gln | Pro | Glu | Pro | Gln | Val | Gly | Asp | Ala |
| | | | 180 | | | | | | 185 | | | | 190 | | |
| Glu | Trp | His | Asp | Ile | Thr | Gly | Thr | Asp | Glu | Lys | Tyr | Gly | Gly | Arg | Ala |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Leu | Lys | Pro | Asp | Thr | Lys | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Lys |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Pro | Thr | Asn | Lys | Glu | Gly | Gly | Gln | Ala | Asn | Val | Lys | Thr | Glu | Thr | Gly |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gly | Thr | Lys | Glu | Tyr | Asp | Ile | Asp | Met | Ala | Phe | Phe | Asp | Asn | Arg | Ser |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Ala | Ala | Ala | Ala | Gly | Leu | Ala | Pro | Glu | Ile | Val | Leu | Tyr | Thr | Glu | Asn |
| | | | | 260 | | | | 265 | | | | | | 270 | |
| Val | Asp | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Val | Tyr | Lys | Ala | Gly | Thr |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Asp | Asp | Ser | Ser | Ser | Ser | Ile | Asn | Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr |
| | | 340 | | | | | | 345 | | | | | 350 | | |
| Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asp |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Ala | Val | Gly | Arg | Thr | Asp | Thr | Tyr | Gln | Gly | Ile | Lys | Ala | Asn | Gly | Ala |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asp | Gln | Thr | Thr | Trp | Thr | Lys | Asp | Asp | Thr | Val | Asn | Asp | Ala | Asn | Glu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Leu | Gly | Lys | Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro | Thr | Asn | Thr | Asn |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro | Ser | Leu | Val | Asp |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser |
| | | 515 | | | | | 520 | | | | | 525 | | | |

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Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro
530          535          540
Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr
545          550          555          560
Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser
565          570          575
Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ala Phe Thr
580          585          590
Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala
595          600          605
Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe
610          615          620
Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn
625          630          635          640
Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe
645          650          655
Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Arg Glu Thr Pro Ser Leu
660          665          670
Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr
675          680          685
Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile
690          695          700
Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr
705          710          715          720
Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn
725          730          735
Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu
740          745          750
Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr
755          760          765
Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg
770          775          780
Gln Val Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu
785          790          795          800
Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr
805          810          815
Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile
820          825          830
Gly Lys Ser Ala Val Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp
835          840          845
Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly
850          855          860
Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His
865          870          875          880
Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu
885          890          895
Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro
900          905          910
His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala
915          920          925
Gly Asn Ala Thr Thr
930

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<210> 120

<211> 942

<212> PRT

<213> Chimpanzee Adenovirus- CV32 Pan6 Hexon

<400> 120

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1          5          10          15

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Arg | Ala | Thr | Asp | Thr | Tyr | Phe | Ser | Leu | Gly | Asn | Lys | Phe | Arg | Asn | Pro | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Thr | Val | Ala | Pro | Thr | His | Asn | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu | |
| | 50 | | | | 55 | | | | | 60 | | | | | | |
| Thr | Val | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr | |
| 65 | | | | 70 | | | | | 75 | | | | | | 80 | |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met | |
| | | | 85 | | | | | 90 | | | | | 95 | | | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser | |
| | | 100 | | | | | 105 | | | | | 110 | | | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly | |
| | 115 | | | | | 120 | | | | | | 125 | | | | |
| Ala | Pro | Asn | Ser | Ser | Gln | Trp | Glu | Gln | Ala | Lys | Thr | Gly | Asn | Gly | Gly | |
| 130 | | | | | 135 | | | | | | 140 | | | | | |
| Thr | Met | Glu | Thr | His | Thr | Tyr | Gly | Val | Ala | Pro | Met | Gly | Gly | Glu | Asn | |
| 145 | | | | 150 | | | | | | 155 | | | | | 160 | |
| Ile | Thr | Lys | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Val | Thr | Ala | Asn | Gln | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |
| Asn | Lys | Pro | Ile | Tyr | Ala | Asp | Lys | Thr | Phe | Gln | Pro | Glu | Pro | Gln | Val | |
| | | 180 | | | | | 185 | | | | | 190 | | | | |
| Gly | Glu | Glu | Asn | Trp | Gln | Glu | Thr | Glu | Asn | Phe | Tyr | Gly | Gly | Arg | Ala | |
| | 195 | | | | 200 | | | | | | | 205 | | | | |
| Leu | Lys | Lys | Asp | Thr | Asn | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Tyr | Ala | Arg | |
| 210 | | | | | 215 | | | | | | 220 | | | | | |
| Pro | Thr | Asn | Glu | Lys | Gly | Gly | Gln | Ala | Lys | Leu | Lys | Val | Gly | Asp | Asp | |
| 225 | | | | 230 | | | | | | 235 | | | | | 240 | |
| Gly | Val | Pro | Thr | Lys | Glu | Phe | Asp | Ile | Asp | Leu | Ala | Phe | Phe | Asp | Thr | |
| | | | 245 | | | | | 250 | | | | | | 255 | | |
| Pro | Gly | Gly | Thr | Val | Asn | Gly | Gln | Asp | Glu | Tyr | Lys | Ala | Asp | Ile | Val | |
| | | 260 | | | | | 265 | | | | | | 270 | | | |
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| | 275 | | | | | 280 | | | | | | 285 | | | | |
| Tyr | Lys | Pro | Gly | Lys | Asp | Asp | Ala | Ser | Ser | Glu | Ile | Asn | Leu | Val | Gln | |
| 290 | | | | | 295 | | | | | | 300 | | | | | |
| Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | |
| 305 | | | | 310 | | | | | | 315 | | | | | 320 | |
| Ile | Gly | Leu | Met | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | | |
| | | | 325 | | | | | 330 | | | | | 335 | | | |
| Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | |
| | | 340 | | | | | 345 | | | | | | 350 | | | |
| Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | |
| | 355 | | | | | 360 | | | | | | 365 | | | | |
| Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | |
| 385 | | | | 390 | | | | | | 395 | | | | | 400 | |
| Cys | Phe | Pro | Leu | Asp | Gly | Ser | Gly | Thr | Asn | Ala | Ala | Tyr | Gln | Gly | Val | |
| | | | 405 | | | | | 410 | | | | | | 415 | | |
| Lys | Val | Lys | Asp | Gly | Gln | Asp | Gly | Asp | Val | Glu | Ser | Glu | Trp | Glu | Asn | |
| | | 420 | | | | | 425 | | | | | | 430 | | | |
| Asp | Asp | Thr | Val | Ala | Ala | Arg | Asn | Gln | Leu | Cys | Lys | Gly | Asn | Ile | Phe | |
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| Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Thr | |
| 465 | | | | 470 | | | | | | 475 | | | | | 480 | |
| Asn | Val | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | |
| | | | 485 | | | | | 490 | | | | | | 495 | | |

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Arg Val Thr Pro Pro Ser Leu Val Asp Ala Tyr Leu Asn Ile Gly Ala
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Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His His
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Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg
      530      535      540
Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys
545      550      555      560
Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg
      565      570      575
Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg
      580      585      590
Thr Asp Gly Ala Ser Ile Ala Phe Thr Ser Ile Asn Leu Tyr Ala Thr
      595      600      605
Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu
      610      615      620
Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala
625      630      635      640
Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser
      645      650      655
Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg
      660      665      670
Leu Lys Thr Arg Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr
      675      680      685
Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu
      690      695      700
Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser
705      710      715      720
Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys
      725      730      735
Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr
      740      745      750
Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr
      755      760      765
Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe
      770      775      780
Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn
785      790      795      800
Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser
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Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr
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Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Ala Ser
      835      840      845
Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro
      850      855      860
Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln
865      870      875      880
Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu
      885      890      895
Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val
      900      905      910
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<212> PRT

<213> Chimpanzee Adenovirus- CV33 Pan7 Hexon

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| Met | Ala | Thr | Pro | Ser | Met | Leu | Pro | Gln | Trp | Ala | Tyr | Met | His | Ile | Ala | | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | | |
| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| Arg | Ala | Thr | Asp | Thr | Tyr | Phe | Ser | Leu | Gly | Asn | Lys | Phe | Arg | Asn | Pro | | |
| | | | 35 | | | | 40 | | | | | 45 | | | | | |
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu | | |
| | 50 | | | | 55 | | | | | | 60 | | | | | | |
| Thr | Leu | Arg | Phe | Val | Pro | Val | Asp | Arg | Glu | Asp | Asn | Thr | Tyr | Ser | Tyr | | |
| 65 | | | | 70 | | | | | | 75 | | | | | 80 | | |
| Lys | Val | Arg | Tyr | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Ser | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly | | |
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| Ala | Pro | Asn | Thr | Cys | Gln | Trp | Thr | Tyr | Lys | Ala | Gly | Asp | Thr | Asp | Thr | | |
| | 130 | | | | 135 | | | | | | | 140 | | | | | |
| Glu | Lys | Thr | Tyr | Thr | Tyr | Gly | Asn | Ala | Pro | Val | Gln | Gly | Ile | Ser | Ile | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | |
| Thr | Lys | Asp | Gly | Ile | Gln | Leu | Gly | Thr | Asp | Ser | Asp | Gly | Gln | Ala | Ile | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | |
| Tyr | Ala | Asp | Glu | Thr | Tyr | Gln | Pro | Glu | Pro | Gln | Val | Gly | Asp | Ala | Glu | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| Trp | His | Asp | Ile | Thr | Gly | Thr | Asp | Glu | Lys | Tyr | Gly | Gly | Arg | Ala | Leu | | |
| | 195 | | | | | 200 | | | | | | 205 | | | | | |
| Lys | Pro | Asp | Thr | Lys | Met | Lys | Pro | Cys | Tyr | Gly | Ser | Phe | Ala | Lys | Pro | | |
| | 210 | | | | 215 | | | | | | 220 | | | | | | |
| Thr | Asn | Lys | Glu | Gly | Gly | Gln | Ala | Asn | Val | Lys | Thr | Glu | Thr | Gly | Gly | | |
| 225 | | | | 230 | | | | | | 235 | | | | | 240 | | |
| Thr | Lys | Glu | Tyr | Asp | Ile | Asp | Met | Ala | Phe | Phe | Asp | Asn | Arg | Ser | Ala | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
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| Asp | Leu | Glu | Thr | Pro | Asp | Thr | His | Ile | Val | Tyr | Lys | Ala | Gly | Thr | Asp | | |
| | 275 | | | | | 280 | | | | | | 285 | | | | | |
| Asp | Ser | Ser | Ser | Ser | Ile | Asn | Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn | Arg | | |
| | 290 | | | | 295 | | | | | | 300 | | | | | | |
| Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | | |
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| Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | |
| Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | | |
| | 355 | | | | | 360 | | | | | | 365 | | | | | |
| Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | | |
| | 370 | | | | 375 | | | | | | 380 | | | | | | |
| His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asp | Ala | | |
| 385 | | | | 390 | | | | | | 395 | | | | | 400 | | |
| Val | Gly | Arg | Thr | Asp | Thr | Tyr | Gln | Gly | Ile | Lys | Ala | Asn | Gly | Asp | Asn | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | |
| Gln | Thr | Thr | Trp | Thr | Lys | Asp | Asp | Thr | Val | Asn | Asp | Ala | Asn | Glu | Leu | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Gly | Lys | Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | | |
| | 435 | | | | 440 | | | | | | | 445 | | | | | |
| Trp | Arg | Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | | |
| | 450 | | | | 455 | | | | | | 460 | | | | | | |

| | | | | | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro | Thr | Asn | Thr | Asn | Thr |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro | Ser | Leu | Val | Asp | Ala |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | Val |
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| Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr |
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| Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | Met | Ile | Leu | Gln | Ser | Ser |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Leu | Gly | Asn | Asp | Leu | Arg | Thr | Asp | Gly | Ala | Ser | Ile | Ala | Phe | Thr | Ser |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala |
| 625 | | | | 630 | | | | | | 635 | | | | | 640 |
| Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg |
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| Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys | Thr | Arg | Glu | Thr | Pro | Ser | Leu | Gly |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | Thr | Phe | Lys | Lys | Val | Ser | Ile | Thr |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro |
| 705 | | | | 710 | | | | | | 715 | | | | | 720 |
| Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr | Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | Trp | Phe | Leu | Val | Gln | Met | Leu | Ala |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| His | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | Phe | Tyr | Val | Pro | Glu | Gly | Tyr | Lys |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln |
| | 770 | | | | 775 | | | | | | 780 | | | | |
| Val | Val | Asp | Glu | Val | Asn | Tyr | Lys | Asp | Tyr | Gln | Ala | Val | Thr | Leu | Ala |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Tyr | Gln | His | Asn | Asn | Ser | Gly | Phe | Val | Gly | Tyr | Leu | Ala | Pro | Thr | Met |
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| Arg</ | | | | | | | | | | | | | | | |

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 <212> PRT
 <213> Chimpanzee Adenovirus- ChAd 3 Hexon

<400> 122

| | | | | | | | | | | | | | | | |
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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Gln | Asp | Ala | Ser | Glu | Tyr | Leu | Ser | Pro | Gly | Leu | Val | Gln | Phe | Ala |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Arg | Ala | Thr | Glu | Ser | Tyr | Phe | Ser | Leu | Ser | Asn | Lys | Phe | Arg | Asn | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Thr | Val | Ala | Pro | Thr | His | Asp | Val | Thr | Thr | Asp | Arg | Ser | Gln | Arg | Leu |
| | 50 | | | | 55 | | | | | 60 | | | | | |
| Thr | Leu | Arg | Phe | Ile | Pro | Val | Asp | Arg | Glu | Asp | Thr | Ala | Tyr | Ser | Tyr |
| 65 | | | | 70 | | | | | 75 | | | | | 80 | |
| Lys | Ala | Arg | Phe | Thr | Leu | Ala | Val | Gly | Asp | Asn | Arg | Val | Leu | Asp | Met |
| | | | 85 | | | | | 90 | | | | | 95 | | |
| Ala | Ser | Thr | Tyr | Phe | Asp | Ile | Arg | Gly | Val | Leu | Asp | Arg | Gly | Pro | Thr |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Phe | Lys | Pro | Tyr | Ser | Gly | Thr | Ala | Tyr | Asn | Ser | Leu | Ala | Pro | Lys | Gly |
| | 115 | | | | | 120 | | | | | | 125 | | | |
| Ala | Pro | Asn | Ser | Cys | Glu | Trp | Glu | Gln | Glu | Glu | Thr | Gln | Ala | Val | Glu |
| | 130 | | | | 135 | | | | | | 140 | | | | |
| Glu | Ala | Ala | Glu | Glu | Glu | Glu | Glu | Asp | Ala | Asp | Gly | Gln | Ala | Glu | Glu |
| 145 | | | | 150 | | | | | 155 | | | | | 160 | |
| Glu | Gln | Ala | Ala | Thr | Lys | Lys | Thr | His | Val | Tyr | Ala | Gln | Ala | Pro | Leu |
| | | | 165 | | | | | 170 | | | | | | 175 | |
| Ser | Gly | Glu | Lys | Ile | Ser | Lys | Asp | Gly | Leu | Gln | Ile | Gly | Thr | Asp | Ala |
| | | 180 | | | | | | 185 | | | | | 190 | | |
| Thr | Ala | Thr | Glu | Gln | Lys | Pro | Ile | Tyr | Ala | Asp | Pro | Thr | Phe | Gln | Pro |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Glu | Pro | Gln | Ile | Gly | Glu | Ser | Gln | Trp | Asn | Glu | Ala | Asp | Ala | Thr | Val |
| | 210 | | | | 215 | | | | | | 220 | | | | |
| Ala | Gly | Gly | Arg | Val | Leu | Lys | Lys | Ser | Thr | Pro | Met | Lys | Pro | Cys | Tyr |
| 225 | | | | 230 | | | | | 235 | | | | | 240 | |
| Gly | Ser | Tyr | Ala | Arg | Pro | Thr | Asn | Ala | Asn | Gly | Gly | Gln | Gly | Val | Leu |
| | | | 245 | | | | | 250 | | | | | | 255 | |
| Thr | Ala | Asn | Ala | Gln | Gly | Gln | Leu | Glu | Ser | Gln | Val | Glu | Met | Gln | Phe |
| | | 260 | | | | | 265 | | | | | 270 | | | |
| Phe | Ser | Thr | Ser | Glu | Asn | Ala | Arg | Asn | Glu | Ala | Asn | Asn | Ile | Gln | Pro |
| | | 275 | | | | 280 | | | | | | 285 | | | |
| Lys | Leu | Val | Leu | Tyr | Ser | Glu | Asp | Val | His | Met | Glu | Thr | Pro | Asp | Thr |
| | 290 | | | 295 | | | | | | 300 | | | | | |
| His | Leu | Ser | Tyr | Lys | Pro | Ala | Lys | Ser | Asp | Asp | Asn | Ser | Lys | Ile | Met |
| 305 | | | | 310 | | | | | 315 | | | | | 320 | |
| Leu | Gly | Gln | Gln | Ser | Met | Pro | Asn | Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg |
| | | | 325 | | | | | 330 | | | | | | 335 | |
| Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly |
| | | 340 | | | | | 345 | | | | | 350 | | | |
| Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln |
| | | 355 | | | | 360 | | | | | | 365 | | | |
| Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Met | Gly |
| | 370 | | | | 375 | | | | | | 380 | | | | |
| Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr |
| 385 | | | | 390 | | | | | 395 | | | | | 400 | |
| Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | Asn | His | Gly | Thr | Glu | Asp | Glu | Leu |
| | | | 405 | | | | | 410 | | | | | | 415 | |
| Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Gly | Gly | Ile | Gly | Val | Thr | Asp | Thr | Tyr |
| | | 420 | | | | | 425 | | | | | | 430 | | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ala | Val | Lys | Thr | Asn | Asn | Gly | Asn | Asn | Gly | Gly | Gln | Val | Thr | Trp | 435 | 440 | 445 |
| Thr | Lys | Asp | Glu | Thr | Phe | Ala | Asp | Arg | Asn | Glu | Ile | Gly | Val | Gly | Asn | 450 | 455 | 460 |
| Asn | Phe | Ala | Met | Glu | Ile | Asn | Leu | Ser | Ala | Asn | Leu | Trp | Arg | Asn | Phe | 465 | 470 | 475 |
| Leu | Tyr | Ser | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | Lys | Leu | Lys | Tyr | Asn | 485 | 490 | 495 |
| Pro | Ser | Asn | Val | Asp | Ile | Ser | Asp | Asn | Pro | Asn | Thr | Tyr | Asp | Tyr | Met | 500 | 505 | 510 |
| Asn | Lys | Arg | Val | Val | Ala | Pro | Gly | Leu | Val | Asp | Cys | Tyr | Ile | Asn | Leu | 515 | 520 | 525 |
| Gly | Ala | Arg | Trp | Ser | Leu | Asp | Tyr | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | 530 | 535 | 540 |
| His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | 545 | 550 | 555 |
| Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | 565 | 570 | 575 |
| Ile | Lys | Asn | Leu | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | 580 | 585 | 590 |
| Phe | Arg | Lys | Asp | Val | Asn | Met | Val | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | 595 | 600 | 605 |
| Leu | Arg | Val | Asp | Gly | Ala | Ser | Ile | Lys | Phe | Glu | Ser | Ile | Cys | Leu | Tyr | 610 | 615 | 620 |
| Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | 625 | 630 | 635 |
| Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | 645 | 650 | 655 |
| Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | 660 | 665 | 670 |
| Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ala | Phe | 675 | 680 | 685 |
| Thr | Arg | Leu | Lys | Thr | Lys | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | 690 | 695 | 700 |
| Pro | Tyr | Tyr | Thr | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | 705 | 710 | 715 |
| Tyr | Leu | Asn | His | Thr | Phe | Lys | Lys | Val | Ser | Val | Thr | Phe | Asp | Ser | Ser | 725 | 730 | 735 |
| Val | Ser | Trp | Pro | Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | 740 | 745 | 750 |
| Ile | Lys | Arg | Ser | Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | 755 | 760 | 765 |
| Met | Thr | Lys | Asp | Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | Asn | Tyr | Asn | Ile | 770 | 775 | 780 |
| Gly | Tyr | Gln | Gly | Phe | Tyr | Ile | Pro | Glu | Ser | Tyr | Lys | Asp | Arg | Met | Tyr | 785 | 790 | 795 |
| Ser | Phe | Phe | Arg | Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Gln | 805 | 810 | 815 |
| Thr | Lys | Tyr | Lys | Asp | Tyr | Gln | Glu | Val | Gly | Ile | Ile | His | Gln | His | Asn | 820 | 825 | 830 |
| Asn | Ser | Gly | Phe | Val | Gly | Tyr | Leu | Ala | Pro | Thr | Met | Arg | Glu | Gly | Gln | 835 | 840 | 845 |
| Ala | Tyr | Pro | Ala | Asn | Phe | Pro | Tyr | Pro | Leu | Ile | Gly | Lys | Thr | Ala | Val | 850 | 855 | 860 |
| Asp | Ser | Ile | Thr | Gln | Lys | Lys | Phe | Leu | Cys | Asp | Arg | Thr | Leu | Trp | Arg | 865 | 870 | 875 |
| Ile | Pro | Phe | Ser | Ser | Asn | Phe | Met | Ser | Met | Gly | Ala | Leu | Ser | Asp | Leu | 885 | 890 | 895 |
| Gly | Gln | Asn | Leu | Leu | Tyr | Ala | Asn | Ser | Ala | His | Ala | Leu | Asp | Met | Thr | 900 | 905 | 910 |

Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe
 915 920 925
 Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile
 930 935 940
 Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
 945 950 955 960

<210> 123

<211> 937

<212> PRT

<213> Chimpanzee Adenovirus- ChAd 6 Hexon

<400> 123

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
 1 5 10 15
 Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30
 Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
 35 40 45
 Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60
 Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
 65 70 75 80
 Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
 100 105 110
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
 115 120 125
 Ala Pro Asn Thr Ser Gln Trp Ile Thr Lys Asp Asn Gly Thr Asp Lys
 130 135 140
 Thr Tyr Ser Phe Gly Asn Ala Pro Val Arg Gly Leu Asp Ile Thr Glu
 145 150 155 160
 Glu Gly Leu Gln Ile Gly Pro Asp Glu Ser Gly Gly Glu Ser Lys Lys
 165 170 175
 Ile Phe Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Leu Gly Asp Glu
 180 185 190
 Glu Trp His Asp Thr Ile Gly Ala Glu Asp Lys Tyr Gly Gly Arg Ala
 195 200 205
 Leu Lys Pro Ala Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
 210 215 220
 Pro Thr Asn Ala Lys Gly Gly Gln Ala Lys Ser Arg Thr Lys Asp Asp
 225 230 235 240
 Gly Thr Thr Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Asp Arg Ser
 245 250 255
 Gln Gln Ala Ser Phe Ser Pro Glu Leu Val Leu Tyr Thr Glu Asn Val
 260 265 270
 Asp Leu Asp Thr Pro Asp Thr His Ile Ile Tyr Lys Pro Gly Thr Asp
 275 280 285
 Glu Thr Ser Ser Ser Phe Asn Leu Gly Gln Gln Ser Met Pro Asn Arg
 290 295 300
 Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 305 310 315 320
 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 325 330 335
 Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
 340 345 350
 Leu Leu Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 355 360 365
 Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn
 370 375 380

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asn | Gly |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Val | Gly | Phe | Thr | Asp | Thr | Phe | Gln | Gly | Ile | Lys | Val | Lys | Thr | Thr | Asn |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Gly | Thr | Ala | Asn | Ala | Thr | Glu | Trp | Glu | Ser | Asp | Thr | Ser | Val | Asn |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Asn | Ala | Asn | Glu | Ile | Ala | Lys | Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn |
| | | | 435 | | | | 440 | | | | | 445 | | | |
| Ile | Gln | Ala | Asn | Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu |
| 450 | | | | | | 455 | | | | | 460 | | | | |
| Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Ile | Thr | Leu | Pro |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Ala | Asn | Thr | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Ser | Leu | Val | Asp | Ala | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Pro | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His |
| 530 | | | | | | 535 | | | | | 540 | | | | |
| Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Leu |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | Met |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Ile | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Thr | Asp | Gly | Ala | Ser |
| | | | | 580 | | | | 585 | | | | | 590 | | |
| Ile | Ala | Phe | Thr | Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | Ala |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | Asn |
| 610 | | | | | | 615 | | | | | 620 | | | | |
| Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | Pro |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | Asn |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys | Thr | Arg | Glu |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val | Tyr | Ser | Gly |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | Thr | Phe | Lys |
| 690 | | | | | | 695 | | | | | 700 | | | | |
| Lys | Val | Ser | Ile | Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | Gly | Asn | Asp |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr | Val | Asp | Gly |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | Trp | Phe | Leu |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Val | Gln | Met | Leu | Ala | His | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | Phe | Tyr | Val |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Pro | Glu | Gly | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | Asn | Phe | Gln |
| | | 770 | | | | 775 | | | | | | 780 | | | |
| Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Glu | Val | Asn | Tyr | Lys | Asp | Tyr | Gln |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Ala | Val | Thr | Leu | Ala | Tyr | Gln | His | Asn | Asn | Ser | Gly | Phe | Val | Gly | Tyr |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Leu | Ala | Pro | Thr | Met | Arg | Gln | Gly | Gln | Pro | Tyr | Pro | Ala | Asn | Tyr | Pro |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Tyr | Pro | Leu | Ile | Gly | Lys | Ser | Ala | Val | Ala | Ser | Val | Thr | Gln | Lys | Lys |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Phe | Leu | Cys | Asp | Arg | Val | Met | Trp | Arg | Ile | Pro | Phe | Ser | Ser | Asn | Phe |
| 850 | | | | | | 855 | | | | | 860 | | | | |

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Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala
865                               870                               875                               880
Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp
                               885                               890                               895
Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg
                               900                               905                               910
Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr
                               915                               920                               925
Pro Phe Ser Ala Gly Asn Ala Thr Thr
                               930                               935

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<210> 124

<211> 956

<212> PRT

<213> Chimpanzee Adenovirus- C1 Hexon

<400> 124

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1                               5                               10                               15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20                               25                               30
Arg Ala Thr Asp Thr Tyr Phe Asn Leu Gly Asn Lys Phe Arg Asn Pro
35                               40                               45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50                               55                               60
Met Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                               70                               75                               80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85                               90                               95
Ala Ser Thr Phe Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
100                              105                              110
Phe Lys Pro Tyr Ser Gly Ser Ala Tyr Asn Ser Leu Ala Pro Lys Gly
115                              120                              125
Ala Pro Asn Thr Ser Gln Trp Leu Asp Lys Gly Val Thr Thr Thr Asp
130                              135                              140
Asn Asn Thr Glu Asn Gly Asp Glu Glu Asp Glu Val Ala Glu Glu Gly
145                              150                              155                              160
Glu Glu Glu Lys Gln Ala Thr Tyr Thr Phe Gly Asn Ala Pro Val Lys
165                              170                              175
Ala Glu Ala Glu Ile Thr Lys Glu Gly Leu Pro Ile Gly Leu Glu Val
180                              185                              190
Pro Ser Glu Gly Asp Pro Lys Pro Ile Tyr Ala Asp Lys Leu Tyr Gln
195                              200                              205
Pro Glu Pro Gln Val Gly Glu Glu Ser Trp Thr Asp Thr Asp Gly Thr
210                              215                              220
Asp Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro Glu Thr Lys Met Lys
225                              230                              235                              240
Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn Val Lys Gly Gly Gln
245                              250                              255
Ala Lys Val Lys Lys Val Glu Glu Gly Lys Val Glu Tyr Asp Ile Asp
260                              265                              270
Met Asn Phe Phe Asp Leu Arg Ser Gln Lys Thr Gly Leu Lys Pro Lys
275                              280                              285
Ile Val Met Tyr Ala Glu Asn Val Asp Leu Glu Thr Pro Asp Thr His
290                              295                              300
Val Val Tyr Lys Pro Gly Ala Ser Asp Ala Ser Ser His Ala Asn Leu
305                              310                              315                              320
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
325                              330                              335
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
340                              345                              350

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| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ala | Gly | Gln | Ala | Ser | Gln | Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | 355 | 360 | 365 |
| Arg | Asn | Thr | Glu | Leu | Ser | Tyr | Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | 370 | 375 | 380 |
| Arg | Thr | Arg | Tyr | Phe | Ser | Met | Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | 385 | 390 | 395 |
| Pro | Asp | Val | Arg | Val | Ile | Glu | Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | 405 | 410 | 415 |
| Asn | Tyr | Cys | Phe | Pro | Leu | Asp | Gly | Val | Gly | Pro | Arg | Thr | Asp | Ser | Tyr | 420 | 425 | 430 |
| Lys | Gly | Ile | Glu | Thr | Asn | Gly | Asp | Glu | Asn | Thr | Thr | Trp | Lys | Asp | Leu | 435 | 440 | 445 |
| Asp | Pro | Asn | Gly | Ile | Ser | Glu | Leu | Ala | Lys | Gly | Asn | Pro | Phe | Ala | Met | 450 | 455 | 460 |
| Glu | Ile | Asn | Ile | Gln | Ala | Asn | Leu | Trp | Arg | Ser | Phe | Leu | Tyr | Ser | Asn | 465 | 470 | 475 |
| Val | Ala | Leu | Tyr | Leu | Pro | Asp | Ser | Tyr | Lys | Tyr | Thr | Pro | Thr | Asn | Val | 485 | 490 | 495 |
| Thr | Leu | Pro | Glu | Asn | Lys | Asn | Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | 500 | 505 | 510 |
| Val | Pro | Pro | Ser | Leu | Val | Asp | Thr | Tyr | Val | Asn | Ile | Gly | Ala | Arg | Trp | 515 | 520 | 525 |
| Ser | Leu | Asp | Ala | Met | Asp | Asn | Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | 530 | 535 | 540 |
| Ala | Gly | Leu | Arg | Tyr | Arg | Ser | Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | 545 | 550 | 555 |
| Pro | Phe | His | Ile | Gln | Val | Pro | Gln | Lys | Phe | Phe | Ala | Val | Lys | Asn | Leu | 565 | 570 | 575 |
| Leu | Leu | Leu | Pro | Gly | Ser | Tyr | Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | 580 | 585 | 590 |
| Val | Asn | Met | Val | Leu | Gln | Ser | Ser | Leu | Gly | Asn | Asp | Leu | Arg | Val | Asp | 595 | 600 | 605 |
| Gly | Ala | Ser | Ile | Ser | Phe | Thr | Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe | 610 | 615 | 620 |
| Pro | Met | Ala | His | Asn | Thr | Ala | Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | 625 | 630 | 635 |
| Asp | Thr | Asn | Asp | Gln | Ser | Phe | Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | 645 | 650 | 655 |
| Leu | Tyr | Pro | Ile | Pro | Ala | Asn | Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | 660 | 665 | 670 |
| Ser | Arg | Asn | Trp | Ala | Ala | Phe | Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys | 675 | 680 | 685 |
| Thr | Lys | Glu | Thr | Pro | Ser | Leu | Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val | 690 | 695 | 700 |
| Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | 705 | 710 | 715 |
| Thr | Phe | Lys | Lys | Val | Ser | Ile | Met | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | 725 | 730 | 735 |
| Gly | Asn | Asp | Arg | Leu | Leu | Thr | Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr | 740 | 745 | 750 |
| Val | Asp | Gly | Glu | Gly | Tyr | Asn | Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | 755 | 760 | 765 |
| Trp | Phe | Leu | Val | Gln | Met | Leu | Ala | Asn | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | 770 | 775 | 780 |
| Phe | Tyr | Val | Pro | Glu | Gly | Tyr | Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | 785 | 790 | 795 |
| Asn | Phe | Gln | Pro | Met | Ser | Arg | Gln | Val | Val | Asp | Glu | Ile | Asn | Tyr | Lys | 805 | 810 | 815 |
| Asp | Tyr | Lys | Ala | Val | Ala | Val | Pro | Tyr | Gln | His | Asn | Asn | Ser | Gly | Phe | 820 | 825 | 830 |


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Val Gly Tyr Met Ala Pro Thr Met Arg Gln Gly Gln Ala Tyr Pro Ala
      835      840      845
Asn Tyr Pro Tyr Pro Leu Ile Gly Thr Thr Ala Val Thr Ser Val Thr
      850      855      860
Gln Lys Lys Phe Leu Cys Asp Arg Thr Met Trp Arg Ile Pro Phe Ser
865      870      875      880
Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu
      885      890      895
Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp
      900      905      910
Pro Met Asp Glu Pro Thr Leu Leu Tyr Leu Leu Phe Glu Val Phe Asp
      915      920      925
Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr
      930      935      940
Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945      950      955

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<210> 125

<211> 933

<212> PRT

<213> Chimpanzee Adenovirus- CV68 Hexon

<400> 125

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Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
 1      5      10      15
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
      20      25      30
Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
      35      40      45
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
      50      55      60
Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65      70      75      80
Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
      85      90      95
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
      100      105      110
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
      115      120      125
Ala Pro Asn Thr Cys Gln Trp Thr Tyr Lys Ala Asp Gly Glu Thr Ala
      130      135      140
Thr Glu Lys Thr Tyr Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Asn
145      150      155      160
Ile Thr Lys Asp Gly Ile Gln Leu Gly Thr Asp Thr Asp Asp Gln Pro
      165      170      175
Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Val Gly Asp Ala
      180      185      190
Glu Trp His Asp Ile Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala
      195      200      205
Leu Lys Pro Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
      210      215      220
Pro Thr Asn Lys Glu Gly Gly Gln Ala Asn Val Lys Thr Gly Thr Gly
225      230      235      240
Thr Thr Lys Glu Tyr Asp Ile Asp Met Ala Phe Phe Asp Asn Arg Ser
      245      250      255
Ala Ala Ala Ala Gly Leu Ala Pro Glu Ile Val Leu Tyr Thr Glu Asn
      260      265      270
Val Asp Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr
      275      280      285
Asp Asp Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ala Met Pro Asn
290      295      300

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| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Pro | Asn | Tyr | Ile | Gly | Phe | Arg | Asp | Asn | Phe | Ile | Gly | Leu | Met | Tyr | 305 | 310 | 315 | 320 |
| Tyr | Asn | Ser | Thr | Gly | Asn | Met | Gly | Val | Leu | Ala | Gly | Gln | Ala | Ser | Gln | 325 | 330 | 335 | |
| Leu | Asn | Ala | Val | Val | Asp | Leu | Gln | Asp | Arg | Asn | Thr | Glu | Leu | Ser | Tyr | 340 | 345 | 350 | |
| Gln | Leu | Leu | Leu | Asp | Ser | Leu | Gly | Asp | Arg | Thr | Arg | Tyr | Phe | Ser | Met | 355 | 360 | 365 | |
| Trp | Asn | Gln | Ala | Val | Asp | Ser | Tyr | Asp | Pro | Asp | Val | Arg | Ile | Ile | Glu | 370 | 375 | 380 | |
| Asn | His | Gly | Val | Glu | Asp | Glu | Leu | Pro | Asn | Tyr | Cys | Phe | Pro | Leu | Asp | 385 | 390 | 395 | 400 |
| Ala | Val | Gly | Arg | Thr | Asp | Thr | Tyr | Gln | Gly | Ile | Lys | Ala | Asn | Gly | Thr | 405 | 410 | 415 | |
| Asp | Gln | Thr | Thr | Trp | Thr | Lys | Asp | Asp | Ser | Val | Asn | Asp | Ala | Asn | Glu | 420 | 425 | 430 | |
| Ile | Gly | Lys | Gly | Asn | Pro | Phe | Ala | Met | Glu | Ile | Asn | Ile | Gln | Ala | Asn | 435 | 440 | 445 | |
| Leu | Trp | Arg | Asn | Phe | Leu | Tyr | Ala | Asn | Val | Ala | Leu | Tyr | Leu | Pro | Asp | 450 | 455 | 460 | |
| Ser | Tyr | Lys | Tyr | Thr | Pro | Ala | Asn | Val | Thr | Leu | Pro | Thr | Asn | Thr | Asn | 465 | 470 | 475 | 480 |
| Thr | Tyr | Asp | Tyr | Met | Asn | Gly | Arg | Val | Val | Ala | Pro | Ser | Leu | Val | Asp | 485 | 490 | 495 | |
| Ser | Tyr | Ile | Asn | Ile | Gly | Ala | Arg | Trp | Ser | Leu | Asp | Pro | Met | Asp | Asn | 500 | 505 | 510 | |
| Val | Asn | Pro | Phe | Asn | His | His | Arg | Asn | Ala | Gly | Leu | Arg | Tyr | Arg | Ser | 515 | 520 | 525 | |
| Met | Leu | Leu | Gly | Asn | Gly | Arg | Tyr | Val | Pro | Phe | His | Ile | Gln | Val | Pro | 530 | 535 | 540 | |
| Gln | Lys | Phe | Phe | Ala | Ile | Lys | Ser | Leu | Leu | Leu | Pro | Gly | Ser | Tyr | | 545 | 550 | 555 | 560 |
| Thr | Tyr | Glu | Trp | Asn | Phe | Arg | Lys | Asp | Val | Asn | Met | Ile | Leu | Gln | Ser | 565 | 570 | 575 | |
| Ser | Leu | Gly | Asn | Asp | Leu | Arg | Thr | Asp | Gly | Ala | Ser | Ile | Ser | Phe | Thr | 580 | 585 | 590 | |
| Ser | Ile | Asn | Leu | Tyr | Ala | Thr | Phe | Phe | Pro | Met | Ala | His | Asn | Thr | Ala | 595 | 600 | 605 | |
| Ser | Thr | Leu | Glu | Ala | Met | Leu | Arg | Asn | Asp | Thr | Asn | Asp | Gln | Ser | Phe | 610 | 615 | 620 | |
| Asn | Asp | Tyr | Leu | Ser | Ala | Ala | Asn | Met | Leu | Tyr | Pro | Ile | Pro | Ala | Asn | 625 | 630 | 635 | 640 |
| Ala | Thr | Asn | Val | Pro | Ile | Ser | Ile | Pro | Ser | Arg | Asn | Trp | Ala | Ala | Phe | 645 | 650 | 655 | |
| Arg | Gly | Trp | Ser | Phe | Thr | Arg | Leu | Lys | Thr | Lys | Glu | Thr | Pro | Ser | Leu | 660 | 665 | 670 | |
| Gly | Ser | Gly | Phe | Asp | Pro | Tyr | Phe | Val | Tyr | Ser | Gly | Ser | Ile | Pro | Tyr | 675 | 680 | 685 | |
| Leu | Asp | Gly | Thr | Phe | Tyr | Leu | Asn | His | Thr | Phe | Lys | Lys | Val | Ser | Ile | 690 | 695 | 700 | |
| Thr | Phe | Asp | Ser | Ser | Val | Ser | Trp | Pro | Gly | Asn | Asp | Arg | Leu | Leu | Thr | 705 | 710 | 715 | 720 |
| Pro | Asn | Glu | Phe | Glu | Ile | Lys | Arg | Thr | Val | Asp | Gly | Glu | Gly | Tyr | Asn | 725 | 730 | 735 | |
| Val | Ala | Gln | Cys | Asn | Met | Thr | Lys | Asp | Trp | Phe | Leu | Val | Gln | Met | Leu | 740 | 745 | 750 | |
| Ala | His | Tyr | Asn | Ile | Gly | Tyr | Gln | Gly | Phe | Tyr | Val | Pro | Glu | Gly | Tyr | 755 | 760 | 765 | |
| Lys | Asp | Arg | Met | Tyr | Ser | Phe | Phe | Arg | Asn | Phe | Gln | Pro | Met | Ser | Arg | 770 | 775 | 780 | |

[illegible]